THE POLAR TIMES

July 2013

President's Message

Fellow American Polar Society members, I hope this issue of *The Polar Times* finds each of you enjoying a beautiful summer wherever you are. Here in the Rocky Mountains of Colorado the weather is near perfect but, increasingly, drought conditions plus dry lightning are once again setting the stage for another rugged season of forest fires. To what extent this is a sign of global warming has yet to be determined.

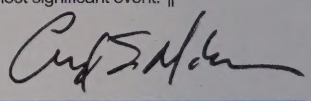
In this regard, the American Polar Society's recent 77th anniversary meeting and symposium on "The Polar Regions in the 21st Century: Globalization, Climate Change, and Geopolitics," held at the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts, and the accompanying 77th anniversary issue of *The Polar Times*, were two resounding successes.

We were most fortunate in having some of the country's—if the not the world's—top authorities and best speakers lecturing on such subjects as "The Earth's Climate History, from Mountain Glaciers and Ice Cores," "A Journey Into Climate Change—Challenges, Predictions, and Opportunities," and "Trends in Accumulating Greenhouse Gases and Their Influences on the Earth's Climate," to name just three of 11 superb presentations. We were also extremely fortunate to have Dr. David Gallo, a world-class marine archaeologist and Director of Special Projects at the Woods Hole Oceanographic Institution, as our banquet speaker. My only regret is that more of you could not have joined us for an extremely interesting, stimulating and educational two days

Special thanks are due to Liz McCarthy at MBL; John Splettstoesser, Chairman of APS's Board of Governors; and also to Sheldon Bart, Lawson Brigham, Rob Flint, Merlyn Paine, and Ed Varney, all of the APS.

By now, I hope that all of you have received your copy of the 77th anniversary issue of *The Polar Times*. I am sure that you will agree with me that it is a work of art, if not a masterpiece! One can't say enough in praise of Managing Editor Cliff Bekkedahl and his superb editorial team, nor of APS's Production Editor, Charlotte Sinclaire. APS is currently in the process of sending copies to key leaders and members of the Polar community worldwide. Preparations are also under way to make it available through Amazon.com.

In closing, I want to make you all aware that APS is now investigating the possibility of holding a symposium on "The Effects of Global Warming on the Polar Oceans" at The Scripps Institution of Oceanography, La Jolla, California, during the fall of 2014. The potential for strong partnership and support couldn't be greater! I hope that you will all make a special effort to join us for what promises to be a most significant event. ¶



About Our Cover

Polar bear mother and her curious yearling cub wandering the pack ice in Greenland. Photo: © Magnus Elander — With a few exceptions within the Hudson Bay population, most polar bear cubs are weaned when they are two and a half years old. From birth until they are old enough to leave their mother, they are cared for exclusively by her. By closely observing her hunting techniques, they learn the skills that are essential for survival. Between the time the young bears finally venture out on their own and they are mature enough to mate, they are called subadults.

Back on Track....

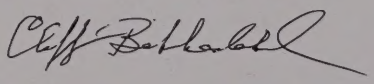
This July 2013 issue gets us back on our normal sequence for publishing *The Polar Times*.

The production of our 77th anniversary edition took longer than expected, and the funds that would have been dedicated to the July 2012 and January 2013 issues, coupled with generous donations from members, as well as from Rolex USA and Lindblad Explorations, made it possible to complete this special project just in time for the April symposium... serendipity!

On behalf of the editorial staff who worked on the anniversary edition, I want to thank all the members who were kind enough to offer their praise and expressions of appreciation for this special edition of *The Polar Times*. 'Twas a labor of love, although the words "never again" were muttered from time to time. Even so—and especially now that it's over—almost all participants have re-upped for the next (2085) edition!

A limited number of additional copies are available, so if you are thinking of a special gift for someone or a donation to an institution, I can only say "act fast." The cost is $35 per copy plus $3 shipping and handling.

Membership Chair Charles Lagerbom has a supply, as do I, so get in touch with either one of us. ¶



New on the Block

.....well not so new, but new in the role...

Our treasurer, Ed Varney, has been in office for over a year now, but the opportunity to introduce him to the membership was stymied by the absence of our last two regular issues of *The Polar Times*.

With a long-term interest in history, the great outdoors and exploration, Ed is a natural for membership in the APS and also a natural for contributing to any activity he has joined, like the Rotary, Habitat for Humanity and his local YMCA. A community banker for over 23 years with Damariscotta Bank in Belfast, Maine, he finds time outside banking hours to do cabinetry, chase fish wherever they may be and share the pride with his wife Karen for raising three successful sons. Welcome aboard, Ed.

Not so new but ever ready to serve, Jim Collinson has agreed to take on the tasks of Secretary to the APS. Jim joined the APS Board of Governors in 1997 and served as Vice President from 2000 to 2010. As many of you know, Jim taught Geology at Ohio State University and conducted research on Permian and Triassic sedimentary rocks in Antarctica with the Byrd Polar Research Center for close to 30 years. A ham radio enthusiast, Jim set up several ham radio stations on the ice and, after retirement, revisited Antarctica as a lecturer on tourist ships. Jim has long been an active member of APS and will hit the ground running in his new role. Thanks, Jim. ¶

Editors Note—On page 29 you will find a new feature for *The Polar Times* entitled "Member Notes." It will contain timely information, notices and commentary about APS members, their achievements, awards and recognition and any special polar activity in which they have been engaged in recent months. In this issue we cite Conrad "Gus" Shinn and Charles Swithinbank and also provide an updated list of the currently living Honorary Members of the American Polar Society. ¶

American Polar Society

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Regular membership dues are $25 a year ($35, foreign) and entitle members to receive *The Polar Times* twice a year. The American Polar Society is classified as a tax exempt organization under Sec 501(C)3 of the IRS Code. For more information about the American Polar Society, contact Charles Lagerbom, APS Membership Chair, at aps@bluestreakme.com

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Managing Editor: Capt. Cliff Bekkedahl, USN (Ret.)
631.267.7646 • cv1957@optonline.net
Production Editor: Charlotte Sinclaire
919.260.0031 • sinclaireca@gmail.com

Editorial Board
Sheldon Bart • Dian Belanger • Lawson B. Brigham
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American Polar Society Symposium

April 15-18 2013, at the Marine Biology Laboratory, Woods Hole, Massachusetts

by Cliff Bekkedahl

If you weren't at the APS symposium in Woods Hole, Mass., in April this year, you missed what turned out to be one of those truly rare opportunities to hear and personally connect with some of our nation's top scientists, academicians and environmental activists.

Their presentations left no room for doubt that the world is hurtling toward a series of catastrophic events—sea levels rising; acidification of the oceans; accelerated melting of sea ice, glaciers and ice sheets; and regional climate changes that will impact human settlements, traditional agriculture patterns and exacerbate political and social relations the world over. The hardest hit? Developing countries and regions...those with the fewest resources to counter the negative effects of dramatic climate change.

Sound serious? It is. But Susan Solomon of MIT's Earth Atmospheric and Planetary Science Department advises, "Don't sell your SUV." She offers this comment not from optimism that climate fixes are just around the corner but rather from irrefutable evidence of irreversibility. With CO_2 at 400ppm, climbing into your SUV on or off the road isn't going to make a difference. Studies show that CO_2 displays exceptional persistence, with its warming effect continuing for 1,000 years after human emissions stop. And by "stop" she means full stop. Ceases. Ends. No more!!

Now, how soon do think that will be?

We have entered a new "Anthropocene era" in geologic history wherein human influence on atmospheric composition is profound. This is a clear and sobering pronouncement from a leading figure in the field of climate change and was echoed by all of the speakers from their scientific and personal perspectives.

President Alfred McLaren giving welcome address. He also introduced all the speakers.

Eel Pond, outside the Marine Biology Laboratory in Woods Hole, Mass.

Their presentations left no room for doubt that the world is hurtling toward a series of catastrophic events

Keynote speakers

Not one but two keynote speakers launched the symposium program. Our APS president, Captain Alfred Mclaren, had the distinct pleasure of introducing Dr. Lonnie Thompson of Ohio State University and Dr. Paul Andrew Mayewski of University of Maine, both recipients of top international and national awards in science and exploration.

If, for whatever reason, you should want to know the history of the world's climate going back 100,000 years or so, these are the gentlemen to call. Ice cores, the technology of their extraction, and the art and science of core analysis is what they, their colleagues and students are all about. And that includes ice cores not just from Antarctica or Arctic glaciers but from mountain tops in the temperate climes of Africa and South America, as well as in Siberia, the Himalayas and any other place on earth high enough to sustain ice for extended periods of time. Name a glacier, and they have been there.

Locally offered expertise

Three of our speakers less traveled—we came to them—were distinguished members of the Woods Hole scientific community, including Dr. Richard S. Williams, Jr., Adjunct Scientist, Woods Hole Research Center, who has just completed editing the penultimate chapter of 11 book length chapters of a satellite image atlas of the world's glaciers. This chapter is quite different from previous ones in that it offers satellite imagery observations of all four components of the earth's Cryosphere—glaciers, snow cover, floating ice and permafrost—whereas other chapters are devoted to glaciers in specific regions.

Later in this issue, Dr. Williams offers us some background on this project that began in the early 1970s with the launching of a satellite that came to be known as Landsat 1.

Closing Out the First Afternoon and Evening

Will Steger is a legend in his own time. A contemporary Arctic and Antarctic explorer, he is a formidable voice calling with authority for preservation of our polar regions. He is a teacher, a doer and, yes, a speaker on the symposium's agenda; but more, he was a "presence" at our gathering; someone for whom it can be said "walks the walk" as well as "talks the talk." Google up the Will Steger Foundation to learn

more about this extraordinary polar expert.

Our traditional symposium banquet gave way to a less formal event—a lobster boil with plenty available for a second pass through the buffet line. When all the empty shells were gathered up, President McLaren introduced the banquet speaker, Dr. David Gallo, Director of Special Projects, Woods Hole Oceanographic Institution, whose biography straddles the world of ocean sciences and physical exploration in the deep waters of all major seas. His *tour d'horizon* captivated the attention of all attendees and brought us to the halfway point of the symposium.

Speakers Paul Mayewski and Will Steger. Both were awarded honorary membership in the APS.

Marine Biology Lab conference center at Woods Hole

Day Two

Our second day of presentations began with our own Dr. Lawson Brigham, Distinguished Professor, University of Alaska, Fairbanks, and member of the APS Board of Directors. Lawson provided an overview of the issues confronting Arctic rim nations in a talk titled "The New Maritime Arctic: Global Challenges & Opportunities" pertaining to that warming and resource-abundant polar region.

Dr. Brigham was careful to accord full recognition to the uncertainties and potential for conflict inherent in the glaring absence of agreements, regulatory bodies and agencies of cooperation that are urgently needed as world economic attention is drawn to a changing Arctic.

Mr. Tucker Scully, representative to the Antarctic Treaty Summit and former director of the Office of Ocean Affairs, U.S. Department of State, and Dr. Deborah Hutchinson, marine geologist and leader of the USGS Law of the Sea Studies, both took a number of laps with the legal and political baton passed to them by Dr. Brigham.

Conclusions

Science, law and politics clearly have conjoined to gather data in the ice-covered Arctic Sea to determine the metes and bounds of offshore underwater territorial claims. Oil and gas deposits, rights of passage, extensions of continental shelves—all these play a role in assertions by states on the littoral and could have profound economic and political ramifications if left to drift unattended or, conversely, pursued too aggressively by one or more parties. An awakening to the importance of these issues seems to be happening.

Time flies when you are having fun, and while fun certainly played a part in each day's events, this gathering in the Woods Hole community was special. First-class authorities offering their best, and knowledgeable, serious-minded attendees eager to hear more and express their concerns...all this coalesced into an unspoken but shared sense that for at least 48 hours we were all on the leading edge of something important. And surely all came away with a better understanding of the changes and challenges manifest in the polar regions of the world. ¶

All photos by Rob Flint

Dinner speaker—and Honorary Member of the APS—Dr. David Gallo, with Dr. Lawson Brigham and President McLaren

The Recovery of Juliet Delta 321 (Part 2)

Article and photos by Jim Mathews

Editor's Note: Part 1 of this article appeared in the January 2012 issue of The Polar Times, on pages 14-15.

US and French traverse participants with 321 on the night we arrived. Left to right: J. Mathews, R. Biery, P. Delay, G. Cameron, E. Puvillard, P. Laffont, D. Simon, M. Brashears, D. Check and R. Magsig. (23 November 1986)

Photo by Pierre David

In June 1986, my employer, ITT—at that time the Antarctic support contractor for the National Science Foundation (NSF)—assigned me as project manager to plan for and execute the recovery of LC-130 aircraft Juliet Delta 321. After a brief meeting at the annual United States Antarctic Program (USAP) planning conference at Port Hueneme in California, Naval Support Force Antarctica (NSFA) and VXE-6 generously turned over their files on the aircraft, and I began to develop a course of action.

The opportunity was unique, and the operational freedom would probably never be repeated, at least within the USAP framework. First, we would have sponsorship from the top. Peter Wilkniss, director of NSF's Division Office of Polar Programs, was the driving force; there would be fewer bureaucratic obstacles than usual and, within reason, my requests would be accepted without challenge. Second, the prevailing wisdom was that we were on a fool's errand, so various third-party "experts" and outside advisors disassociated themselves from the effort. Almost no one thought the aircraft would be salvageable or even in one piece. This attitude was entirely to my liking as I would be able to control the plan and assemble my own team.

On the other hand, high-level attention and project autonomy increased our visibility. Lots of people were expecting us to fail. Any major mistake in planning or implementation on my part would end the project. However, after a number of field seasons in Antarctica, I had enough knowledge and confidence to believe that recovery of 321 was a relatively simple task. The key elements were a small, multi-skilled and experienced team and an operational approach that could be reduced to a series of LC-130 load plans that would deliver our supplies and equipment in the required sequence, and on a schedule designed for maximum productivity from the time we left McMurdo.

The first and most important thing to do was choose the team. Roger Biery, a heavy equipment operator and easily one of the most creative people I ever met in Antarctica, was perfect. Not only did he possess the critical job skills, he was a near constant source of interesting ideas. Russ Magsig, a talented heavy equipment mechanic, could fix nearly anything by himself and preferred to work alone or in small groups. Dan Check, a tireless bulldozer operator, had the ability to make every pass with the machine count.

> *"After a number of field seasons in Antarctica, I had enough knowledge and confidence to believe that recovery of 321 was a relatively simple task."* — Jim Mathews

321 AT THE MID-EXCAVATION POINT—Note the over 20 -foot-high wall of snow, with another 12 feet to go to reach the aircraft's skis. Dan Check operating the D-6 tractor; Roger Biery operating the 931 with Didier Simon; George Cameron and Michael Brashears on top of the aircraft. (15 December 1986)

George Cameron, a journeyman machinist with versatile trades skills was also a degreed engineer. He could provide design services and structural analyses as needed. Finally, Michael Brashears, a very good chef and USAF-trained medical technician, would be our cook, medic and radio operator, and provide aviation weather reports while the rest of us were working on the excavation. I had known and worked with each person for several years, which made selection easy.

With our group in place, we turned to detailed planning. Roger proposed new blades and buckets for the heavy equipment, which would significantly increase our snow-moving capability, and convinced me to design a camp that would provide most of the amenities found at an inland station, albeit on a smaller scale.

While incidental to the goal, our camp quickly became an independent "design/build" effort—the sort of idea that if authorized as a conventional USAP project would have devolved into a series of "studies" before being shelved. With the latitude to design it ourselves, we created a self-contained module that, when finished at McMurdo, fit onboard an LC-130 and contained a radiant heating system, a complete bathroom and kitchen, a snowmelter and water holding tank, a washer and dryer, plug-in outlets for the tractors and other features—all powered by a 20KW marine generator. Most of the furnishings came from Sears.

Near the end of the excavation. Dan Check and Roger Biery constructing the towing ramp, working their way from the surface down 35 feet to 321's skis (20 December 1986)

NSF contacted Expédition Polaires Françaises concerning their ability to conduct a traverse to D-59 the following season. The French were willing, and their assistance and generosity would prove invaluable. It also provided another impetus to our team. France had graciously provided operational support for all previous US attempts, and we felt that, if nothing else, our "Expolaires" colleagues deserved a good effort on our part to finally make something happen.

> *"As is usually the case in Antarctica, the weather intervened and a wet, marine storm system blew in, burying our supplies and eradicating the skiway."*—Jim Mathews

By August, I had completed our LC-130 load plans, each designed to build on the previous one and eventually render us self-sufficient at D-59. We would ship a snowplane, two tractors (including our largest, a D-6 bulldozer), a 10-ton sled, and miscellaneous food, fuel and tools to D-21, a French traverse staging area on the coast of Adelie Land and near their station Dumont D'Urville. There we would construct a skiway for the heavier planeloads to follow, assemble our tractors and then follow the French team on the 130-mile traverse inland to D-59.

Roger and Russ deployed to McMurdo on Winfly to begin preparing the tractors and other equipment. I completed our planning, paid a visit with George to the Lockheed Marietta plant in Georgia to discuss 321 with two of the engineers who had been on the 1978 inspection team, and then left for McMurdo in October with George and Michael. Dan would not arrive until early November as he was finishing a project at home in New Mexico.

Because of the high priority ranking that NSF assigned to our cargo most of the critical items, including the tractor blades and buckets, arrived by mid-October. The ITT construction crew built, wired and plumbed our module, which we then finished and tested. The module worked better than expected, and moved easily on a ski cradle that Roger designed and built for it, so we decided to ship it to D-21 and tow it to D-59. This proved a wise decision.

Later that month, the five-person French traverse team arrived at McMurdo. I had met their leader, Pierre Laffont, before and one of them, Didier Simon, spoke excellent English. Didier would stay with us at D-59 for the entire season.

Finally, we were as ready as we would ever be, so Russ, Roger and myself left on the first flight for D-21 with the French team. George and Michael would monitor the flight plans to follow and Dan would join us at D-21 after he arrived at McMurdo.

The first and second flights to D-21, both on the same day, were "low ACL" (allowable cabin load) because of the somewhat rough landing surface at D-21. The second flight brought our snowplane and an I-beam drag. Roger and Russ set to work immediately, working far into the night (there was still an hour or two of darkness at our latitude) to produce a finished landing surface.

The third flight was my biggest concern so far. Roger and Russ had built an excellent skiway, but there was enough residual doubt about the project within the USAP power structure at McMurdo that a "safety" issue would immediately arise if the skiway was perceived as less than satisfactory. A few such questions had already been raised concerning cargo weights and off-load procedures at the McMurdo air operations planning board meetings, and I knew from experience where all that was headed.

So, when the third flight arrived two days later we watched the landing carefully. The aircraft seemed to land on rails. We had a radio in the French "restaurant" caravan, one of the sled-mounted fiberglass modules that made up our camp, to monitor the flight frequencies. As soon as the airplane had transmitted its "off-deck" report on take-off, MAC Center at McMurdo, as if to confirm my suspicions, demanded, "say condition of skiway". I turned the volume up. Lieutenant Commander (LCDR) Carnahan, the pilot, answered, "the skiway is very hard, but very smooth; recommend landing weights be increased to 135,000 lbs."

With that answer, the most convenient near-term obstacle disappeared and we were truly on our way. I spoke to LCDR Carnahan on later

321 ready for towing. (Evening, 24 December 1986)

321 back atop the Plateau. (26 December 1986)

flights, but never thanked him, which I do now.

Between flights, we had the opportunity to visit Dumont D'Urville, a fun experience. A large Emperor penguin rookery (where the movie, "March of the Penguins," was filmed) is adjacent to the base, which is atop an island. The structures, some of fiberglass and many painted orange, are anchored to the rock and linked by walkways. Living and working interiors featured glass doors to create a more open environment and the dining hall, center of the complex, was run almost exactly like a restaurant. Occupants rotated duty as waiters and the cook was considered to be the most important person at the base. We enjoyed a superb, multi-course French cuisine dinner and were introduced to what I'll call the "World's Best Bread," some type of round, crusty loaf baked in the kitchen that was unlike anything we'd ever eaten. Before we left for D-59 the cook sent us several large bags full of this bread. Most of us went through a loaf a day until, sadly, we ran out in early December.

> *"The interior, while littered with debris, was unchanged. The only signs of the immense snow burden were a few cracked windows on the flight deck, which was bathed in a dim, bluish light."*—Jim Mathews

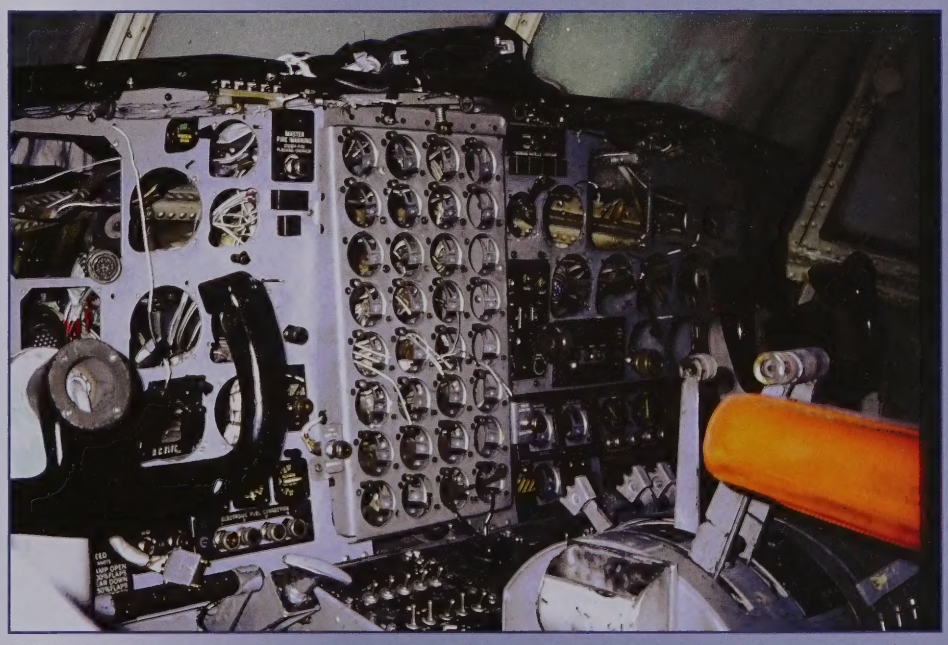
Once our skiway was accepted, the heavier cargo began to arrive. Bad weather at McMurdo caused some delays, but the components for the D-6 eventually came in on sequential flights as planned, one of which brought Dan Check. Russ, Dan and Roger assembled the D-6 in a single day, an effort I'd originally scheduled for two to three days. Our module and other items followed, and we were close to being ready to depart for D-59. As is usually the case in Antarctica, the weather intervened and a wet, marine storm system blew in, burying our supplies and eradicating the skiway before the last flight, bringing George, Michael and a 10-ton sled, could depart. After a few days the storm dissipated, Russ, Roger and Dan reconstructed the skiway, and the last flight made it in early in the morning of November 19.

Although not exactly behind schedule, we needed to get going so, with little sleep, we left that afternoon for D-59. The French navigation vehicle led, followed by the D-6 and the D-4 towing sleds and the snowplane, the 931 loader pulling the module, and the other two French Hotchkiss vehicles. After a few kilometers, it became clear that the 931 lacked the capacity to pull the module so we switched the module to the French D-4 and put the snowplane behind the 931. This configuration worked well and Dan still had enough power in the D-6 to doze a road for the other vehicles, demolishing huge sastrugi as we climbed steadily towards the plateau.

Pierre Laffont had told me that the traverse would probably take a week, but with good weather we could improve on that. As it turned out, we reached D-59 in not quite five days, arriving on the night of November 23. After ten minutes of scanning the horizon through binoculars, Pierre David sighted "l'avion" and we drove up to 321. The French had visited the aircraft for years—Pierre Laffont had been there when it crashed—but we were seeing it for the first time.

We started laughing. All that was visible was the top three feet of the tail and there was drifting up to the top on the downwind side. In one more season, 321 would probably disappear forever.

If anything, the reality of 321's predicament belied our apprehension. Because it looked funny, the task seemed less daunting. We began setting up our camp and, after making radio contact with McMurdo, we were put on the next day's flight schedule. That flight, however, would not land – this was a production milestone, a planned air drop of fuel that would render us self-sufficient for up to three weeks.



321's flight deck on the day we first entered the aircraft. Loose wires remain from where the instruments and gauges were hurriedly removed before the plane was abandoned. (10 December 1986)

CONTINUED FROM PAGE 7

The air drop went well enough. Two pallets of fuel "streamed in," i.e., the parachutes failed to open, and the drums burst open in impressive fashion on contact with the snow, but the other pallets floated down intact. We picked up the drums, organized a fuel cache and, once again, Roger, Dan and Russ built a skiway. Two days later, the first flight landed at D-59.

Over the next few days, we said goodbye to the French team, except for Didier Simon who would remain with us, and assembled a third tractor, a 955 loader, shipped in pieces on three subsequent flights. This tractor, and even more fuel, enabled full production for at least a month. All we needed was reasonably good weather.

Towing 321 around to our camp site. (27 December 1986)

And, in fact, the weather cooperated. We had a few minor, multi-day storms, but generally clear weather prevailed for almost the entire month of December. I suspect many disasters in Antarctica have been avoided by not much more than good luck over the years, but "luck" can also favor those who are well prepared.

We began experimental excavation around 321 on November 26, working from behind the tail as our one visible reference with marker flags outlining the wing and nose perimeters. Dan and Roger expertly took down the snow in layers around the perimeter so we could hand excavate to another reference point, the #1 engine. We exposed two of its propeller blades, which then gave us a precise marker for the left wingtip.

The early excavation showed several things. First, 321 was buried by over 20 feet of hard, compacted snow, not the 12 to 15 feet we had estimated. Second, the aircraft was in something of a state of equilibrium with the snow. Coverage over the years appeared to have been relatively uniform with no uneven pressure areas. Third, as the snow was removed and sunlight melted thin layers of ice, the airframe and wings would flex – imperceptibly at first and then noticeably over several days. I measured a 32-inch rise at the right wingtip over 72 hours.

Interesting as all this was, the structural integrity of the fuselage was unknown until we got inside, which we did on December 10 via the aft escape hatch. The interior, while littered with debris, was unchanged. The only signs of the immense snow burden were a few cracked windows on the flight deck, which was bathed in a dim, bluish light.

At nearly $1 million apiece at the time, salvage of even one engine turned a profit; salvage of all four recouped project costs by over 300%, certainly a unique occurrence in the history of government-sponsored activity in Antarctica.

Having confirmed that we had an intact airplane, we continued uncovering the top surfaces, working our way over to the right wing and then forward to the nose. George, Didier and me did lots of shoveling, but a chainsaw proved to be our most useful tool at this stage. This removal pattern also helped dissipate stress on the airframe and, of course, eventually revealed the complete airplane.

The deeper we went, the harder the snow became. Our D-6 was fitted with a ripper, which Dan put to good use fracturing the snow down to the landing gear. He then switched to constructing a towing ramp, a mammoth job that required working his way back 300 feet from the edge of the nearly 35 foot deep excavation pit. His ability to move huge amounts of snow economically and relentlessly never failed to impress us.

Now that it was exposed, 321 seemed to want to help us. Once snow was moved away from the lower fuselage and sunlight could warm the wheel wells, seals and hydraulic fluid in the landing gear struts and elsewhere began to expand, and 321 leveled itself one afternoon with an audible lurch. We then broke the skis loose from the surface by attaching two custom-made hoses VXE-6 had given us to one of the tractors and using its hydraulics to cycle the skis.

As Dan, now joined by Roger, finished the ramp, we cleared remaining snow from under the wings and around the nose, and readied the aircraft for towing. If all went well, this would take no more than 10 minutes; however, there were several unknowns. The tow points on the skis were not designed for this kind of torque and the gradient of our towing ramp would change 321's center of gravity, something that we wanted to happen so we could partly rotate the aircraft and extend the nose ski, but we could only guess at the angle where this might happen.

We were ready on December 24, but the weather closed in with high winds and blowing snow. Fortunately, it started to clear that evening, leaving 321 with a coating of ice, but otherwise looking promising for the next day.

On Christmas Day we headed out to the excavation site with a set of towing cables, also provided by VXE-6. Dan cleared the ramp and we hooked up the cables to 321's skis and the D-6's ripper. Roger positioned the 955 in front of the D-6 and attached a cable between the two so they could combine the two machines' horsepower.

The first try went nowhere. Dan spotted what appeared to be a block of ice on the underside of the fuselage behind the nose ski. We chipped at it with bars and shovels. The rest of us stood back while Dan and Roger tried again. This time 321 broke free and followed the tractors up the ramp. After about 50 feet, the aircraft began to rotate on its main skis. Once the nose ski extended, we knew that we could loop a chain around the strut and tie it back to the cargo deck through an access port designed exactly for that purpose.

Unfortunately, one of the towing cables snapped, leaving all the weight on the still whole cable, which then pulled the towing eye out of the ski it was attached to. 321, to our chagrin, slid back into the pit, its tail stopping a foot short of the rear wall. On the positive side, it was now

Preparing to enter 321 for the first time; left to right: G. Cameron, D. Simon, M. Brashears, R. Magsig, D. Check, R. Biery. (10 December 1986)

resting on the nose ski strut, which we promptly chained into position.

It was late afternoon, the weather was deteriorating and we were not about to leave 321 where it was. So, we wrapped blanket scraps around the main gear struts, looped stronger towing cables from the tractor winches around the struts (a practice discouraged by Lockheed, but without the tow points on the skis we had no other option) and added the 931 to the tractor procession as an extra source of power. Finally, everything worked as planned. In less than a minute, 321 regained its footing from 1971, this time with its nose landing gear in the right position. We shook hands, parked the tractors and returned to the module to celebrate what remained of Christmas. Michael called MAC Center to let them know that 321 was back atop the plateau and, with that, we looked forward to a few leisurely days on our own.

On December 27 we towed 321 around to our camp, parked it next to the taxiway and cleaned up the interior. Two days later, a tourist flight arrived, carrying Peter Wilkniss and others, as well as a maintenance team from VXE-6 to remove 321's engines. Wilkniss told me that we had "silenced" the doubters and that our work would help NASA develop plans for "long-term storage of spacecraft". Whatever that meant, there was little question that, in the political world he inhabited, Wilkniss had rolled the dice and won. And, to his credit, he had taken some personal risk doing so.

The next day, we dug a trench, towed 321 into it, and the VXE-6 team quickly and efficiently removed the engines. At nearly $1 million apiece at the time, salvage of even one engine turned a profit; salvage of all four recouped project costs by over 300%, certainly a unique occurrence in the history of government-sponsored activity in Antarctica.

After the engines and the Navy team departed, all that was left was to host a two-man inspection party from Lockheed and a Naval Air Rework Facility (NARF), retrograde some equipment and close our camp. We disassembled and shipped the D-6 (I think that this same machine is still in use at the current South Pole Station, or was until recently) and then sat around for nine days while the worst weather of the season partially buried the camp. When it cleared, we positioned the remaining tractors, sleds and other equipment on top of the spillage pile from the excavation, sealed 321 against the elements and, once the last flight arrived, shut down power and heat to the module and Jamesway, and flew back to McMurdo.

What had we accomplished? We salvaged an intact and repairable aircraft, one with a replacement value of over $30 million, but we also had the satisfaction of planning and executing an unusual project. We dug a very large hole – by the end the tractors had moved at least 60,000 cubic yards of snow – and we learned a lot about the remarkable preservative characteristics of a dry, cold environment. Snow loading and icecap movement would have eventually crushed 321 – serious deformation would probably have occurred by the early 1990s if it had been left as it was – but up to that point the aircraft was basically in a state of suspended animation.

No corrosion or deterioration of any kind was evident. One day I found a flashlight, still attached by clips to the interior fuselage near the aft escape hatch. I idly pushed the switch to the "on" position. A beam of light appeared, strong enough to show objects over 10 feet away. After 15 years the ordinary Mil-spec "D" batteries were still good, probably with the same life they had on the day 321 crashed.

Modern technology could create a vault somewhere on the East Antarctic plateau that would last for thousands of years, its contents perfectly preserved for future generations.

Wilkniss may actually have been on to something with his spacecraft storage idea. There's nothing to be gained by burying, say, a Space Shuttle in the Antarctic interior, but modern technology could create a vault somewhere on the East Antarctic plateau that would last for thousands of years, its contents perfectly preserved for future generations.

The postscript to our project is both sad and illuminating. With the hard part over, 321 once again became what it always should have been: a repair job with somewhat difficult, but, if done right, not really complicated logistics. A multi-agency effort followed, with the Navy managing the project, ITT providing camp support, NARF and Lockheed technicians repairing the aircraft, and a VXE-6 flight crew taking 321 back to McMurdo.

In the interim, Peter Wilkniss was named a Federal "distinguished executive," receiving the award from President Reagan. The return of 321 would be a celebratory event with accolades for participating officialdom.

Hubris, of course, attracts Nemesis. While repair work was underway the following season, XD-03, a newer LC-130, crashed on approach to D-59. The aircraft was destroyed and, worse, two passengers killed. Neither the project nor the location was a contributing factor, but the loss of one aircraft to regain another moved the entire effort into the realm of irony and tragedy.

Michael Brashears preparing a weather report.

Juliet Delta 321 did return to service. After an extensive modernization program, it rejoined VXE-6 in the early 1990s and flew off and on in Antarctica until 1998. I had the opportunity to fly from the South Pole to McMurdo aboard it in early 1998 while I was doing some consulting work for the NSF. It was slightly nostalgic, but nothing more. I asked the co-pilot if he knew 321's background. He did, but was not really interested.

The aircraft was moved to a dry environment of a different kind in 1999, mothballed under preservative coatings at Davis-Monthan Air Force Base in Arizona, where it remains today. ¶

In memory of Michael Brashears, 1946 – 2012

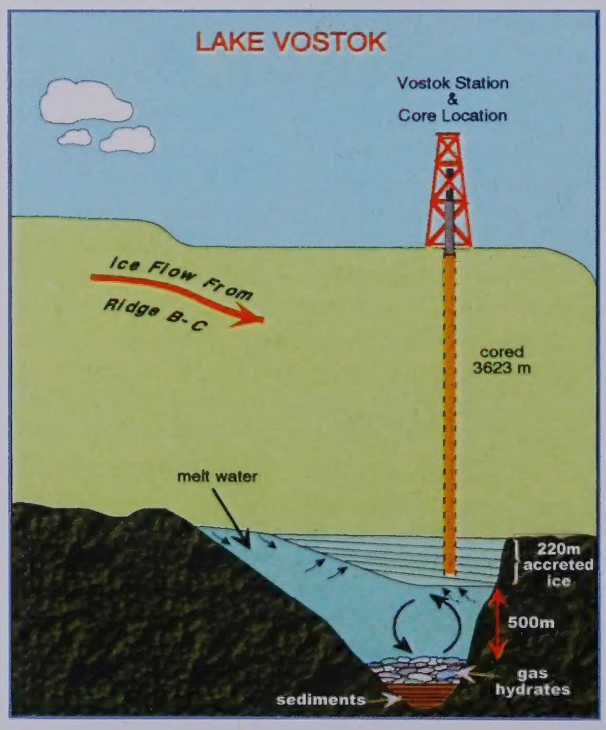
Lake Vostok — A Lake Under the East Antarctic Ice Sheet

by Robert H. Rutford

Recent press releases describing the activities of the Russian drilling efforts at Lake Vostok, Antarctica, the results of the U.S. drilling effort at Lake Whillans in West Antarctica, and the delayed drilling program of the British at Lake Ellsworth remind us of the somewhat complex history of the study of sub-glacial lakes in Antarctica. The initial announcement in 1994 of the presence of a lake under Vostok Station led scientists to re-examine geophysical records, and it is now believed that the presence of about 200 sub-glacial lakes can be documented. During the past Antarctic field season the U.S. group, using a hot water drilling technique, successfully penetrated the 800 meters of ice over Lake Whillans, located along the east edge of the Ross Ice Shelf. A second drilling activity being conducted by the British Antarctic Survey, also using a hot water drill, in an attempt to drill into another lake (Lake Ellsworth) was terminated due to problems associated with formation of a water-filled cavity at 300 meters depth.

John Splettstoesser (*The Polar Times,* January 2007, p. 36) reviewed a most interesting book, *Subglacial Lake Vostok: Glaciology, Biology and Planetology*, written in 2006 by Igor Zotikov during his tenure as a Fulbright Scholar at the U.S. National Snow and Ice Data Center (NSIDC) and the World Data Center for Glaciology at the University of Colorado in Boulder. It is worthwhile to re-read Zotikov 's book as a part of the understanding of the glacial lake activities currently underway.

There are many anecdotal stories about the location of Vostok Station, the main inland research site of Russia (formerly the Soviet Union). Probably the most creditable story relates to the late arrival of the Soviet delegate to an International Geophysical Year meeting at which the participating countries indicated their interests in establishing stations at various sites around the coast and in the interior of the continent. Prior to the arrival of the Soviet delegate the United Sates had indicated its interest in a station at the South Pole. The Soviets had also planned to establish a station at the South Pole; but when they learned of the U.S interest, the Soviets chose instead a site at the Pole of Relative Inaccessibility (a spot "located at the longest distance from any shore") and a second location at the site of the Geomagnetic Pole at that time. This latter site became the location of what we now know as Vostok Station. The station at the Pole of Relative Inaccessibility was never constructed except for a building that remains there from the initial visit to the site by the Soviets in 1958.



Zotikov's book is an interesting interweaving of science and history. No attempt is made to suggest that the location of Vostok Station above the lake was anything but pure luck. The notion of a lake was simply not part of the agenda, and the glaciologists were concerned with the temperature characteristics and distribution of dateable materials within the ice rather than spending time wondering if there were standing bodies of water of whatever origin at the bottom of the ice sheets in Greenland and Antarctica. Although there was an early suggestion that there was water below the ice sheet in the Vostok area, there was little interest in the further exploration and verification of that idea.

Theoretical Considerations

The theoretical considerations of the vertical composition of the ice sheet suggested that the heat flow from the earth under the ice sheet could well cause melting and the formation of a "wet base" under the ice sheet. The ice that melted started as snow at the surface and carried not only water but also air to the bottom of the ice sheet. Some of the melted ice remained as water under the ice while other portions of the water migrated to the margins and refroze to the bottom of the ice. Zotikov notes that the notion of a hypothetical lake under the ice and the probability of life of some form in that lake was of much less interest to the scientists than the study of the ice itself. The presence of a hypothetical lake at Vostok was discussed as early as 1964 and was "later inferred" when water was found in the bottom of the U.S. drill hole at Byrd Station in 1968.

Geophysical activities at Vostok Station were conducted in the early 1960s. Professor Kapitsa was able to show that the ice thickness in the area was over 3,000 meters rather than the 2,000 meters earlier estimated. In 1963 Kapitsa did another seismic study near Vostok Station and obtained two seismic reflections. These were interpreted as a reflection from the contact between the ice and a sedimentary layer and the second (deeper) reflection as from the bottom of the frozen sedimentary layer. These seismic reflections were then put into storage, and it was

not until 30 years later that they were retrieved from a shed at Prof. Kapitsa's *dacha* to be re-studied in light of the information that was available from radio-echo soundings in the Vostok area. The re-examination of the seismic records confirmed the notion of a large lake at Vostok Station and, at the SCAR meeting in Rome in 1994, Dr. Kapitsa presented the latest results and noted the great scientific interest in the waters of Lake Vostok. SCAR immediately drafted and passed a Recommendation noting the importance of this lake and urged the Russians to proceed with great caution with further drilling so that the problems of contamination might be resolved before drilling through the ice into the waters of the lake.

The Waters of Lake Vostok

This writer was involved in several workshops, etc., dealing with the problem of entry into the waters of Lake Vostok. Many of the same issues had been raised about drilling through the Ross Ice Shelf. Zotikov notes that the restrictions that were placed on the RISP drilling effort were unrealistic and that the drilling and coring effort was almost doomed to failure before it began. The drill became stuck; the next season a hole was "burned" through the ice; and the issue of contamination was set aside when the waters beneath the Ross Ice Shelf were entered and the submersible television camera recorded fish swimming happily by. The possible use of hot water drilling processes is not possible because of the great thickness of the ice over Lake Vostok.

It is important to note that the deep drilling efforts of the Russians utilized an electromechanical drill in a hole kept open through the use of a fluid composed of jet fuel and freon. This fluid introduced a variety of contaminants and the possible introduction of these into the waters of the lake was of great concern. The scientific community voiced its recommendations that the drilling be stopped at the 1996 depth of 3,300 meters until this contamination problem could be resolved. A number of "workshops" were convened, a wide variety of individuals participated, the Arctic and Antarctic Research Institute (AARI) of Russia produced an environmental impact assessment to meet SCAR's requirements, etc. Drilling was largely suspended for a variety of reasons, but in 2006 the hole was deepened to 3,650m.

The question of possible exotic life forms being present in the waters of Lake Vostok remains unresolved.

The basal layers of ice in the core retrieved from the hole were quite different from the rest of the core, and it was generally agreed that two forms of accreted ice were detected. This ice was studied in detail by the microbiologists and a number of microbes were present. Accreted ice had been in contact with the drill and drilling fluid, and the presence of these microbes may well have been a result of contamination from those sources.

Fast-forward to the Antarctic field season of 2012-2013. The drill penetrated into the lake water which rose into the drill hole. This was planned and the hole was under-pressurized to insure that this occurred. This "plug" quickly froze and was then drilled, and a core of this ice was recovered for study. In late February-early March of 2013 it was announced that "unknown" bacteria had been found in the waters of Lake Vostok. This announcement was followed several days later by another Russian microbiologist stating his doubt on the veracity of the early statement.

At the May 2013 meeting of the ATCM in Brussels the Russians tabled three papers in the Committee on Environmental Protection. One of these papers, entitled "The discovery of unknown bacteria in Lake Vostok," makes no mention of the fact that the head of the genetics lab at the St. Petersburg Institute suggested that the earlier announcement was premature and that, until samples of pure water were available for study, the determination that life if any might exist in Lake Vostok would have to wait. He added, "For now we'd rather not say something we will be unable to whitewash even with the crystal clear Vostok water."

The question of possible exotic life forms being present in the waters of Lake Vostok remains unresolved. Until such time as verified, pristine samples are obtained it will be difficult to prove that any life forms found were not introduced during the drilling process. It appears that all of the materials studied to date have been exposed in one way or another to the drilling fluids. ¶

Reference: ATCM XXXVI - Brussels, 2013 - IP 42: The discovery of unknown bacteria in Lake Vostok.

Ceaseless Pressure on Whales

***The New York Times* (Editorial), 11 May 2013**—Since 1986, when the International Whaling commission imposed a moratorium on whaling, there has been a steady resurgence in whale populations. The recovery of several species pushed to the brink of extinction by commercial whaling is a reminder of the resilience of nature. Even so, there is a nearly constant push to ease the restrictions that have protected the whales and, in some cases, to resume hunting. There are two cases in point: fin whales near Iceland (a nation that has never accepted the I.W.C. moratorium) and humpback whales near Hawaii.

An Icelandic company, Hvalur, has announced that, after a two-year pause, it plans to resume killing fin whales beginning in June. Nearly all the meat will be sold to Japan, another nation that defies the commission's ban. Fin whales, second in size only to blue whales, are listed as endangered by the National Oceanic and Atmospheric Administration, and the Convention on International Trade in Endangered Species, or CITES, lists them as threatened with extinction. Among the biggest threats is ship strikes. The nonwhaling nations—the United States and rest of the world, that is—must protest this new hunt.

Even in our nonwhaling country there is growing pressure to remove some whales from the endangered species list. A coalition of commercial fishermen in Hawaii has asked NOAA to designate the Hawaiian humpbacks a separate population, which would make it easier to delist them. The logic behind this is almost impenetrable. The coalition says it has no desire to hunt these whales, whose numbers have jumped from 1,400 in the 1960s to some 21,000 today, and that safeguards under the I.W.C. should continue.

What really worries these fishermen is that some of the fish species they catch will one day be listed as endangered, too. Their plea has less to do with the humpbacks than with limiting the reach of the endangered species laws. But as we've learned, there is no such thing as too much protection for a recovering species. Whales of every species need all the protection they can get. ¶

U.K. Names Antarctic Feature as Part of Territorial Claim

Copyright Government of the British Antarctic Territory/CASCO Studio

Queen Elizabeth Land, in honor of the Queen on her Diamond Jubilee, was approved on 18 December 2012, just weeks after naming Albert Trough and Caird Trough, both on 26 November 2012. Queen Elizabeth Land is centered at 84°S, 49°W, with an area of 169,000 square miles, nearly twice the size of the U.K. It includes the Pensacola Mountains; the Filchner and Ronne Ice Shelves are directly north of Queen Elizabeth Land; the Shackleton Range is to the northeast; and the British station Halley is nearby to the east.

The feature extends in a wedge shape to the geographic South Pole, much the same as six of the seven territorial claims, and is part of the original U.K. claim of 1908. The U.K. was first to claim a part of Antarctica, and six additional countries did the same in succeeding years. All claims are held in a "frozen state" as a result of the terms of the Antarctic Treaty of 1959, which does not mean they were abandoned, but are not enforceable. Thus, Antarctica is the only large landmass on Earth that is not owned by anyone or any nation. The seven claimant countries and the years of their claims include U.K. (1908), New Zealand (1923), France (1924), Norway/Peter I Island (1929), Australia (1933), Norway/Queen Maud Land (1939), Chile (1940), and Argentina (1942). The Marie Byrd Land sector (90°W–150°W) is unclaimed. The claims of Argentina, Chile, and U.K. overlap in the Antarctic Peninsula.

The original U.K. claim had boundaries of 20°W to 80°W and extended in a wedge shape to the South Pole.

Caird Trough is at 76°12'S, 27°48'W, and Albert Trough at 77°16'22"S, 33°27'50"W, just offshore of the Luitpold Coast, and near Belgrano Station II, an active Argentine Station on the Littlewood Nunataks at 77°52'S, 34°37'W. In 2010 the station had a crew of 19. ¶

Membership Gets All the Interesting Mail...

Mr. Charles Lagerbom
American Polar Society
Searsport, Maine

Dear Mr. Lagerbom:

We have the privilege of offering for sale the Truscott copy of the original 1909 printing of the Aurora Australis, edited by Ernest Shackleton. On the assumption that your members may be interested in the availability of this rare Antarctic work, may we ask you please to use the information below to announce its appearance for sale. Three photographs are included; additional photographs are available upon request. This information is also available on the website abebooks.com. We may also be contacted directly by email, ordinary mail, or telephone at the addresses or numbers below. We thank you in advance for your assistance.

Very truly yours,

(Mr.) Jan Ludwig
Waverly & Rugby Books
165 Eldorado Lane
Pinehurst, North Carolina
U.S.A. 28374
(910) 295-5049

Sale price of this item is $30,000...

...and for £30,000 you might also have had...

Medal Belonging to Explorer Who Never Forgave Himself for Failing to Rescue Scott Off the Antarctic After Coming Within 12 Miles of His Stranded Team, Goes On Sale For £30,000

www.dailymail.co.uk, **18 June 2013, by Becky Evans**—The Polar Medal awarded to an explorer who came within 12 miles of rescuing Scott of the Antarctic, and his team will be auctioned for £30,000 tomorrow.

Apsley Cherry-Garrard was haunted for the rest of his life by not being able reach the four men perished as they returned from the South Pole.

He was one of the party who found the frozen bodies of three of his friends and later wrote in his autobiography the horror of realising how close he came to saving them.

When he returned from the Antarctic, he was awarded the Polar Medal and the Royal Geographical Society's Scott Memorial Medal, which are now going under the hammer.

They have been in the hands of a renowned collector of gallantry medals for the last 50 years and he is now selling them.

Christopher Hill, of medal specialists Dix Noonan Webb of London, said, "Cherry-Garrard wrote a book about the expedition and called it *The Worst Journey in the World.*

"It completely reveals the hardship suffered and the type of character required of the men who went on these expeditions.

"It is a sad thing in Cherry-Garrard's case that his life was forever shadowed by what could have been had he carried on that bit further.

"Birdie Bowers and Edward Wilson were very close friends of his, and he was deeply affected by what happened."

Captain Scott, Edward Wilson, Lawrence Oates, Henry Bowers and Edgar Evans made it to the South Pole on January 17, 1912, only to find Norwegian explorer Roald Amundsen had beaten them to it a month before.

On their return journey, the five men endured dreadful conditions and suffered from a lack of food and frostbite.

Meanwhile Cherry-Garrard, who was a member of the 11-strong support party, had been ordered to the supply depot to re-stock it with food and was meant to meet the group after their historic trip.

However, after days of waiting he followed orders given to him and returned north to the expedition's headquarters in order to spare the sledge-dogs.

> **Cherry-Garrard's teeth chattered so much that many of them shattered.**

Had he carried on south, and killing one dog at a time to feed to the rest after running out of food, he would have found the remaining men stranded in their tent after 12 miles.

Cherry-Garrard left the One Ton Depot on March 10, 1912. Lawrence Oates died on March 16 after famously walking out of the tent to give the others a chance of survival.

Scott, Edward Wilson and Henry 'Birdie' Bowers all died on or around March 30.

PO Evans had died on February 17.

Eight months later, at the end of the Antarctic spring, Cherry-Garrard was a member of the search party that went out and found the three men dead in their tent alongside their diaries.

In a letter dated six months later, Cherry-Garrard described his horror at finding the frozen bodies of finding his three teammates.

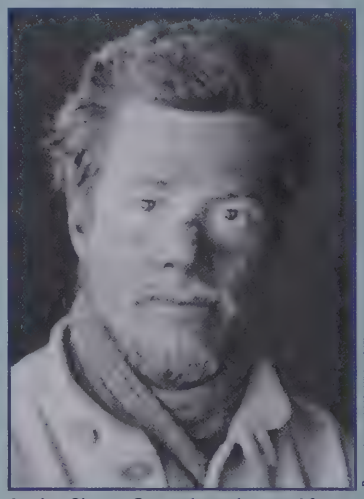


PHOTO COURTESY WWW.DAILYMAIL.CO.UK

Apsley Cherry-Garrard was haunted for the rest of his life by not being able reach the four men perished as they returned from the South Pole.

Cherry-Garrard was a 24-year-old zoologist and went on the expedition to help gather penguin eggs.

Four months before Scott set off on his ill-fated trip to the pole, Cherry-Garrard, Bowers and Wilson undertook a 60-mile trek to Ross Island to secure three eggs.

The men endured temperatures of -77°F, and Cherry-Garrard's teeth chattered so much that many of them shattered.

In his famous journal, Scott wrote on August 2, 1911, "Cherry-Garrard is slightly puffy in the face and still looks worn.

"It is evident that he has suffered most severely—but Wilson tells me that his spirit never wavered for a moment."

Cherry-Garrard's collection of 27 letters he sent home from the South Pole went under the hammer with a guide price of £80,000 in October.

In them he wrote, "We have found the bodies of Scott, Wilson & Bowers, and all their records... Their death was, I am quite sure, not a painful one—for men get callous after a period of great hardship—but the long fight before must have been most terrible."

He added, "Theirs is a fine story... Wilson & Bowers had died very quietly, probably in their sleep."

The then 26-year-old told his mother he had endured "about the worst time I have ever had... it has been an absolute hell." ¶

PHOTO BY BWAS.CO.UK

The rare medals were expected to fetch at least £30,000 at auction. They brought £58,000—nearly double the top estimate.

Alaska Pilot Art Mortvedt Reaches Both North and South Poles in Same Cessna 185

Photo courtesy Art Mortvedt

(www.newsminer.com), **FAIRBANKS, Alaska, 2 May 2013, by Dermot Cole**—Veteran Alaska pilot Art Mortvedt is on his way back from the North Pole, completing a dream of flying over both the North and South Poles in a single-engine Cessna 185.

It took years of planning and three attempts to reach the North Pole.

"It's been a challenge, but a very interesting challenge, interacting with people of many countries and many backgrounds. It's a lot of work, but very enjoyable in many ways," he said.

Mortvedt, 63, is in Inuvik today, about 460 miles northeast of Fairbanks, waiting for clear weather to fly back to Alaska. He and his wife Damaris live in the Brooks Range and in Manley.

On April 6, he flew over the North Pole in the *Polar Pumpkin*, an orange plane in which he flew over the South Pole on Nov. 22, 1999. One of the remarkable aspects of his journey is that he was able to talk on a satellite phone to his wife while crossing the Top of the World.

"I had a very narrow weather window and I managed to make it on the third try," he said in a phone interview today from Inuvik.

The past two years he also attempted the flight, but was stopped by the weather at about 80 degrees North Latitude. His single-engine plane carries 112 gallons of fuel, enough for about six hours of flying time.

During his more than three decades as a pilot, Mortvedt has flown nearly 6,000 hours in single-engine planes, most of the time on skis or floats. His *Polar Pumpkin* is a bit slower than a typical Cessna 185, about 115 mph, because it has wheel/skis and a "belly pot" below the fuselage for cargo.

He flew from the Eureka Weather Station on Ellesmere Island in the Canadian Arctic to the North Pole, where the rough jumble of ice made landing impossible. He proceeded, as planned, to a Russian ice station 20 miles from the Pole where he had arranged to have a load of fuel shipped.

The Russian ice station, which was abandoned in late April with the arrival of spring, included tents, snowmachines, helicopters, bulldozers and other equipment brought in for a three-week window of scientific work. The bulldozers were parachuted to the ice and the operators followed them down by parachute, Mortvedt wrote on his blog. The tents are heated by oil-fired burners.

The bulldozers also cleared a runway on the ice floe, dubbed Ice Station Barneo, to allow small planes like Mortvedt's and larger ones like the Antonov 74 to land. Mortvedt's six drums of AvGas, each containing about 20 gallons, were delivered to the site by the Russians.

> *"It's as flat as a pancake except for the pressure ridges of sea ice ... that pack ice is always moving. You could be at the North Pole one minute and the next you're not."*— Art Mortvedt

While he was flying to the North Pole, Damaris made a couple of calls to the Russian ice station to make sure it was still clear. Mortvedt said he had picked out a couple of spots where he could land in case the weather was bad. It was clear.

While he was on the ice at Barneo, there was a marathon race, with 62 runners from all over the world. Mortvedt was in Antarctica when there was a marathon at the South Pole. He was trying to sleep when the North Pole marathon began at midnight.

Among the international group of visitors at the ice station was a fellow pilot who had just flown a turbine helicopter from Moscow to the North Pole.

I asked Mortvedt to describe what he saw as he flew over the Pole: "It's as flat as a pancake except for the pressure ridges of sea ice and it's the epitome of dynamics, basically because that pack ice is always moving. You could be at the North Pole one minute and the next you're not."

Among the many items he brought with him to the Pole was Explorers Club Flag No. 53, the flag that Col. Bernt Balchen took to Antarctica in 1933. Balchen was the first to fly over both Poles.

Regarding his North Pole crossing, Mortvedt wrote on his website:

"The weather en route was generally pretty good. The closer I got to the North Pole, however, the more patches of low cloud and fog showed up—especially to my left, or out to the west. There were enough of these that I became increasingly concerned that I would not actually be able to find and land at Ice Station Barneo. As a precaution, I denoted the coordinates of a couple refrozen leads that were in the clear, to which I could retreat, and put up my camp, in case Barneo was actually socked in. Vadim, the manager at Barneo, was fabulous. Damaris made satphone calls to him periodically; and he confirmed that "Yes, Barneo was still in the clear."

After returning from the Pole, Mortvedt spent about two weeks at the Eureka Weather Station, waiting until April 23 for clear weather so he could fly to Resolute Bay. ¶

News from the Polar Centers...

Arctic Institute of North America

Maribeth Murray was appointed Director of AINA effective July 1, 2013. Dr. Murray comes to AINA from the International Arctic Research Center and Northern Studies Program of the University of Alaska Fairbanks. She completed a BA in Archaeology from Wilfred Laurier University, an MA in Archaeology from Memorial University of Newfoundland, and a PhD in Anthropology from McMaster University. In addition to her five-year appointment to AINA Murray also begins an appointment as Professor in the Faculty of Arts, Department of Archeology.

Polar Center at Penn State University

The Polar Center at Penn State University was established in 2013 to foster creative, ground-breaking and synergistic collaboration by catalyzing exchange among members with a unique breadth of expertise at Penn State, representing the life-, physical-, and social sciences. The Center provides a unique platform for powerfully forward-thinking scientific exchange with other national and international institutions through workshops and conferences focusing on polar science, and with the local community through public events and lectures. http://polar.psu.edu/about.html. ¶

CO_2 for Thought.....

by Cliff Bekkedahl

The Wall Street Journal of 9 May 2013 carried an article on the Opinion page titled "In Defense of Carbon Dioxide," authored by two gentlemen whose credentials—engineering and physics—seem credible, if not slightly off the mark in terms of the thrust of their argument, plant biology and agriculture.

Harrison Schmitt (former astronaut; former senator from New Mexico; and now Adjunct Professor of Engineering at the University of Wisconsin) and William Happer (Professor of Physics at Princeton and a former Director of the Office of Energy Research at the U.S. Department of Energy) teamed up to take a slap at conventional global warming dogma, asserting that advocates of government control of energy production have deliberately demonized carbon dioxide as a dangerous pollutant when in fact it is an essential component in the photosynthesis process. They contend that the world needs more, not less, CO_2 in the atmosphere and that, historically, the earth's atmosphere has embraced CO_2 PPM far, far beyond the latest figure of 400 PPM.

"And life flourished on the land and in the oceans during those periods," they argue. "The cessation of observed global warming for the past decade or so has shown how exaggerated NASA's and most other computer predictions of human-caused warming have been—and how little correlation warming has with carbon dioxide...variations in global temperature correlate much better with solar activity and complicated cycles of the oceans and atmosphere."

Their argument then goes on at length describing the process by which carbon is converted by various plant life into carbohydrates . According to the authors, at our current "low levels" of carbon dioxide plants are paying a heavy price in water usage. Another short lesson ensues describing how plants obtain carbon from the air and the role played by water in this process. The conclusion is that the more CO_2 that is available the less water is required to produce the carbohydrates to nurture the plant.

Not inclined to mince words, the tag team of Schmitt and Happer close by asserting that "the incredible list of supposed horrors that increasing carbon dioxide will bring the world is pure belief disguised as science."

Then the Letters to the Editor...

Professors James Kasting and Katherine Freeman of Penn State University point out "that weeds which are C3 plants may out-compete C4 crops like corn in a CO_2 rich world."

(Weeds!! Now that's a powerful argument that will resonate across a broad swath of our suburban population!)

They go on to chide Professor Happer, saying that as a physicist he should know that increases in atmospheric CO_2 will warm the climate. Indeed, carbon dioxide concentrations have a direct correlation with climate warming both in the past and in recent times.

Another Pennsylvanian, Roger Cohen, Ph.D., chimed in supporting the "more CO_2 notion" and pointed out that CO_2 has literally greened the planet over the past 30 years. Measurements conducted for the "Normalized Difference Vegetation Index" that maintains records of plant growth, vegetation cover and biomass production indicate considerable net "greening" of the earth due largely to increased atmospheric CO_2.

Clearly, correlation is key to everyone's arguments! ¶

President Obama Releases US National Strategy for the Arctic Region

***Arctic Update*, 10 May 2013**—Today, the President signed the National Strategy for the Arctic Region. A statement by the White House Office of the Press Secretary reads, "The United States is pleased to join our Arctic Council colleagues Canada, Norway, Denmark, Iceland, Finland, Russia, and Sweden in articulating our strategic priorities for this critical region of the world.

The Administration solicited input from Alaska Natives, the State of Alaska and others as it was developing the National Strategy for the Arctic. Successful implementation of the high-level lines of effort identified in the National Strategy will depend upon active engagement with Alaska Natives, the State of Alaska and other key stakeholders. In particular, proceeding with the stewardship of Arctic resources under an Integrated Arctic Management approach requires, by its terms, meaningful, up-front input by the State, Alaska Natives, and others. As a further demonstration of its commitment to such input, Administration officials will be hosting roundtable discussions in Alaska in the coming weeks to discuss how best to move forward with the implementation of the concepts laid out in this National Strategy. The initial meetings will include high-level Administration officials from the White House, and from key agencies. The meetings will be held in mid-June, at a time and location that will be confirmed shortly." ¶

Ice-Free Arctic May Be Nearer Than We Thought

Crater Reveals Warmer World

***Science World Report*, 10 May 2013**—The Earth may be hurtling toward an ice-free Arctic in the coming years. Researchers have discovered that the icy north experienced an extended period of warm temperatures about 3.6 million years ago, a time when ice was scarce in the Arctic. Researchers examined a remote meteorite crater in Siberia, where sediments located in Lake El'gygytgyn recorded the unusually balmy climate of the Arctic millions of years ago. At the time, greenhouse gas levels were as high as today, while temperatures were about 14 degrees Fahrenheit higher. The seas levels were also 130 feet higher than they are at present. ¶

Polar Bear Hunting Viewed Through Indigenous Crosshairs

by Moki Kokoris

(originally posted on the Polar Bears International – Scientists & Explorers Blog, April 2013)

Part I

The ICON ON ICE: International Trade and Management of Polar Bears report states: "Managers, biologists, Arctic communities and conservation organizations may have differing opinions or different methods for achieving and measuring success or failure. However, they do share a common goal: to conserve polar bears."

Whether or not they subscribe to the science of human-induced global warming, tourists flock to the areas where polar bears can be viewed in their natural surroundings. The urgency to glimpse the majestic creatures "before it's too late" is palpable, and staunch environmentalists have made the species the symbol of their various causes and advocacy campaigns.

An ostensible icon of the Arctic, the polar bear is attracting ever-increasing international attention. As the Far North continues to warm and the ecosystem is poised to experience an inevitable dramatic transition, this sentinel species has become the primary focus of conservation efforts, some of them misguided. Along with consequences for the polar bears themselves, the impacts of impending changes will affect not only their habitat, but also the lifestyles of the indigenous communities who have lived in harmony with the bears for countless generations.

Having evolved, adapted, and altered their distribution in relation to shifts in climate, landscape, and resource availability, all indigenous peoples throughout the Arctic region have a deep-rooted relationship with their environment. Wildlife and its spiritual significance have been central in the development of many Northern cultures, and often play an integral role in their respective oral histories, traditions, and mythologies. Even in the face of societal pressures of globalization, many indigenous groups continue to rely on herding, fishing, and hunting as their primary sources of subsistence, each of which enables the people to maintain their social, cultural and spiritual identities.

Photo: © Sébastien Tixier

Pipaluk Hammeken and Sara Lyberth in traditional Inuit fur clothing (Uummannaq, Greenland)

For the Inuit specifically, the polar bear and the hunting of it are means by which the hunters and their culture have defined themselves for thousands of years as is portrayed in northern art and legends. A traditional activity that ensures cultural cohesion and provides sustenance for the community, the polar bear hunt is a source of prestige, accomplishment and pride—but always with deep respect paid to the bear, even in death.

Photo: © Sébastien Tixier

Wearing seal fur anoraks, polar bear fur pants, and traditional kamiks, Sara Lyberth and Pipaluk Hammeken return to their village on Uummannaq island in western Greenland.

Just as one traditional story claims that nanuk was a man in disguise who would shed his pelt upon entering his home, there are many other legends and rituals associated with the taking of a polar bear. Once killed, the bear's body would be oriented with its head facing North, and water was poured into its mouth as the last drink before its journey. The hunter might even hang the bear skin inside his igloo for a few days to give its spirit sufficient time to settle into the afterlife. Occasionally the bear's spirit would be offered gifts. Such customs allowed the killed bear to share with other polar bears how well its spirit had been treated so that they, too, might one day agree to be hunted.

Traditional knowledge dictates that as little as possible of any bear taken is wasted. Its meat is shared with the whole community, the prime parts offered to the elders. Its bones are carved into tools and handicrafts, the hide fashioned into clothing (i.e., fur pants, mittens, boots or mukluks, fur ruffs for parkas), and various raw membranes are used to make instruments such as traditional drums and shamanistic implements.

Because polar bear hunting is a controversial and invariably contentious issue, and particularly since there are so many regulatory aspects and data to consider, it is difficult to establish a single viewpoint or recommended course that will guarantee an optimal conservation outcome. The complexities of the issues notwithstanding, we should nevertheless strive to foster a balanced and objective discourse, without marginalizing the indigenous frame of reference.

It is important to note that the 1973 Agreement on the Conservation of Polar Bears and subsequent conservation efforts and actions

taken by polar bear range countries (the United States, Canada, Greenland/Denmark, Norway, and Russia) have helped to preserve polar bear populations in much of their historic territories, but it is essential to bring attention to the fact that representatives of Northern indigenous groups are not yet being given equal hearing at policy-making tables.

Fundamentally, not only to the aboriginal peoples of the Arctic but to all indigenous cultures who inhabit this Earth, the ultimate edict is that man is not distinct from nature but is a part of it. Human beings are an inherent component of the ecosystem as a whole. We in the industrialized—and seemingly more civilized—world have lost our connection with nature. When we are hungry, we have the luxury of buying our food in prepackaged form, and we rarely think about all the steps required to bring it to our shelves in that state. Likewise, when we are cold, we have the option of purchasing a thick parka that we choose from a store rack. How often do we question where the goose down that will keep us warm came from or how it is collected? To most of us who are accustomed to modern day conveniences, the concept of subsistence is foreign, and yet our tendency is to judge those who live in a very basic and direct relationship with an environment that is the sole source of food, shelter and clothing.

Many television programs and films feature nature as it really is "out in the wild." As we observe the dynamic interplay between the hunter and the hunted, the majority of us will hope that the seal escapes the polar bear's attack, but at the same time, we grieve for the polar bear mother who lost her cubs to starvation, her own future in jeopardy. Only when we view the seal and polar bear jointly do we grasp the relationship in which the two species exists. Moreover, considering the indigenous conviction that humans are an equal constituent in that same environment and ecosystem, why would we not condone the hunter's pursuit to take a seal or polar bear that will feed and clothe not just the hunter's own family but many others in the community? These are the principal rules of nature.

Photo: © Sébastien Tuzek

Sara Lyberth helping Pipaluk Hammeken pull on her traditional fur-lined kamik. boots.

Native peoples around the globe do not presume that they are superior to the animals they hunt because they understand that humans are intimately intertwined with the ecosystem and are intrinsic to the cycle. They respect the interconnectivity of the natural world by taking only what they need, thereby maintaining a sustainable balance that guarantees survival for all. How could their lifestyle be criticized as unethical in comparison to ours of over-consumption and little regard for how our behavior affects the planet?

Perhaps without considering the negative repercussions of their biased crusades, and as well-meaning as their intentions may be, "save the seals" or "save the polar bears" flag-waving activists who categorically oppose all hunting—including harvests based on sustainable quota systems—may not realize that they are wrongfully removing man from the system of ecological interdependence. In taking that stance, the protesters are unjustly condemning native hunters for following millennia-old practices that manifest as much respect for their quarry as for man's place in the symbiotic natural order of life. We would do well to honor this perennial indigenous wisdom.

There may be many valid opinions on the topic of polar bear hunting, however, the indigenous perspective remains the most crucial scope through which all of us should view the issue. By granting the native peoples the freedom to hunt polar bears as they always have, we are helping them preserve their subsistence cultures, and in the process we are entrusting the future of the polar bear to the people who best understand and can safeguard its place in our world.

Photo: © Sébastien Tuzek

Preparing the box sledge for a ride over the frozen Uummannaq fjord.

Part II: Revelations from the Desk of a Reformed Activist

This segment of the two-part article is written in the first person because it reflects my own views as they have evolved through time, experience and personal edification.

Part I of this entry expressed a perspective I did not always have. In mentioning "flag-waving activists who categorically oppose all hunting," I was also referring to myself in the past. With respect to the Arctic's ecological interdependence of species, I knew little about the intricate aspects of a subsistence lifestyle prior to my direct interactions with indigenous people. That lack of understanding was evidenced by my vehement protests against the hunting of polar bears across the board. But for the sake of the future of Inuit hunter and polar bear alike, my views have fortunately changed, transforming me from the uninformed subjective activist I had been to the more objective advocate for indigenous rights I have become.

As my participation at annual Permanent Forum on Indigenous Issues conferences at the United Nations over the past decade has offered me numerous opportunities to meet and speak with representatives of all indigenous populations around the globe, I grew to understand that these groups lay claim to an ancient ethic of responsibility toward the environment and all the creatures that thrive in it.

In direct contradiction with the accepted views of the industrialized world, to all indigenous peoples, their environment is not a "grocery store at the service of men." Aboriginal people

Having just emerged from the frigid water, a young male polar bear sniffs the air for its next meal. Polar bears have an exceptionally acute sense of smell, and are able to detect seals from nearly one mile away and from beneath three feet of snow. ***(Photo: © Uri Golman)***

survived for millennia by respecting nature and living sustainably in a symbiotic relationship with it. They do not attempt to conquer the natural world nor mold it nor exploit it, and their cultural belief systems are fundamentally based on the interconnectivity with their surroundings.

Regrettably, westerners have a tendency to believe that because we have been formally educated, it is somehow our responsibility to go forth and "civilize" those whom we view as more primitive. As I have gained broader perspective and look back at my own past actions, though any effort to "improve upon" age-old traditions may seem to be altruistic, I now know that it is nevertheless misguided. Why had I assumed that my values were superior? As well intentioned as my mission might have been, why was I imposing my ethics and philosophy on people to whose lifestyles I could not relate?

We must think about the inadvertent consequences of our activism. By prohibiting the Inuit to hunt seals or polar bears even within quota limits, we force them into living scenarios in which their only option is to rely on government subsidies, be it for food or clothing, all of which is imported and therefore prohibitively expensive. As I had zealously endeavored to save the seal and the polar bear, I was unwittingly condemning an entire culture to a lifestyle to which it cannot relate.

Regrettably, westerners have a tendency to believe that because we have been formally educated, it is somehow our responsibility to go forth and "civilize" those whom we view as more primitive.

It is not the polar explorers nor the colonialists nor any of us environmental activists, but the Inuit people (and their counterparts in other territories of the Far North) who should be regarded as "guardians of the Arctic." Their lives are directly intertwined with the ecosystem of which they are a crucial component and which is the source of the traditional knowledge that sustained them and which they sustained for thousands of years. They themselves call their relationship with nature "a common understanding of what life is about." It is this mutualism that defines the Inuit spirit. And it is that spirit that I finally chose to honor.

The reason I speak on this topic with so much passion is because I feel it is critical that all of us examine the validity of our convictions before we decide to embark on a course of action that could be one-sided. While I still consider myself an environmental activist, and one who adamantly opposes trophy hunting of any kind, my personal evolution as it relates to indigenous practices has offered me a balanced perspective that is respected not only in wide societal circles but also by the Inuit themselves. Just as the Inuit respect and guard the Arctic and the animals with which they coexist, so I respect and guard their rights, cultural knowledge and inextricable relationship with the polar bear. ¶

'Polar Star' Gets Back to Work

Navy Times, 17 June 2013, by Antonieta Rico—After almost seven years out of commission, and a reactivation cost of $90 million, a Coast Guard heavy icebreaker is back in action.

The *Polar Star* is the nation's only heavy icebreaker, and it can break through 21 feet of ice. The ship is heading to ice trials in the Arctic in mid-June and will remain in the Barrow Point and northern Alaska region until early August, said the ship's commanding officer, Capt. George Pellissier.

During ice trials, Pellissier will test how the overhauled *Polar Star* performs and how his crew operates underway and in the Arctic.

The Coast Guard has not had a heavy icebreaker in operation since the *Polar Sea*'s engine failed in 2010. The *Polar Star* has been laid up since 2006.

With no active heavy icebreakers for a few years, the Coast Guard has catching up to do in its polar proficiencies, Commandant Adm. Bob Papp said May 21, the day he released the service's Arctic Strategy.

Boatswain's Mate 1st Class John Skinner, *Polar Star*'s deck force supervisor and a veteran of the *Polar Sea*, said he wants his crew to get their quals during the ice trials.

"More than half of them are not qualified on their underway billet," he said.

That is because the *Polar Star* has only been under way about two and a half weeks in the last six months. The crew has spent most of its time performing maintenance trying to get the *Polar Star* back on the ice. Not only that, a lot of the crew are right out of boot camp, Skinner said.

There are some more senior Coasties happy to get under way, too, he said, especially after years of maintenance work, including redoing the berthing, painting, deck work and maintaining the small boats.

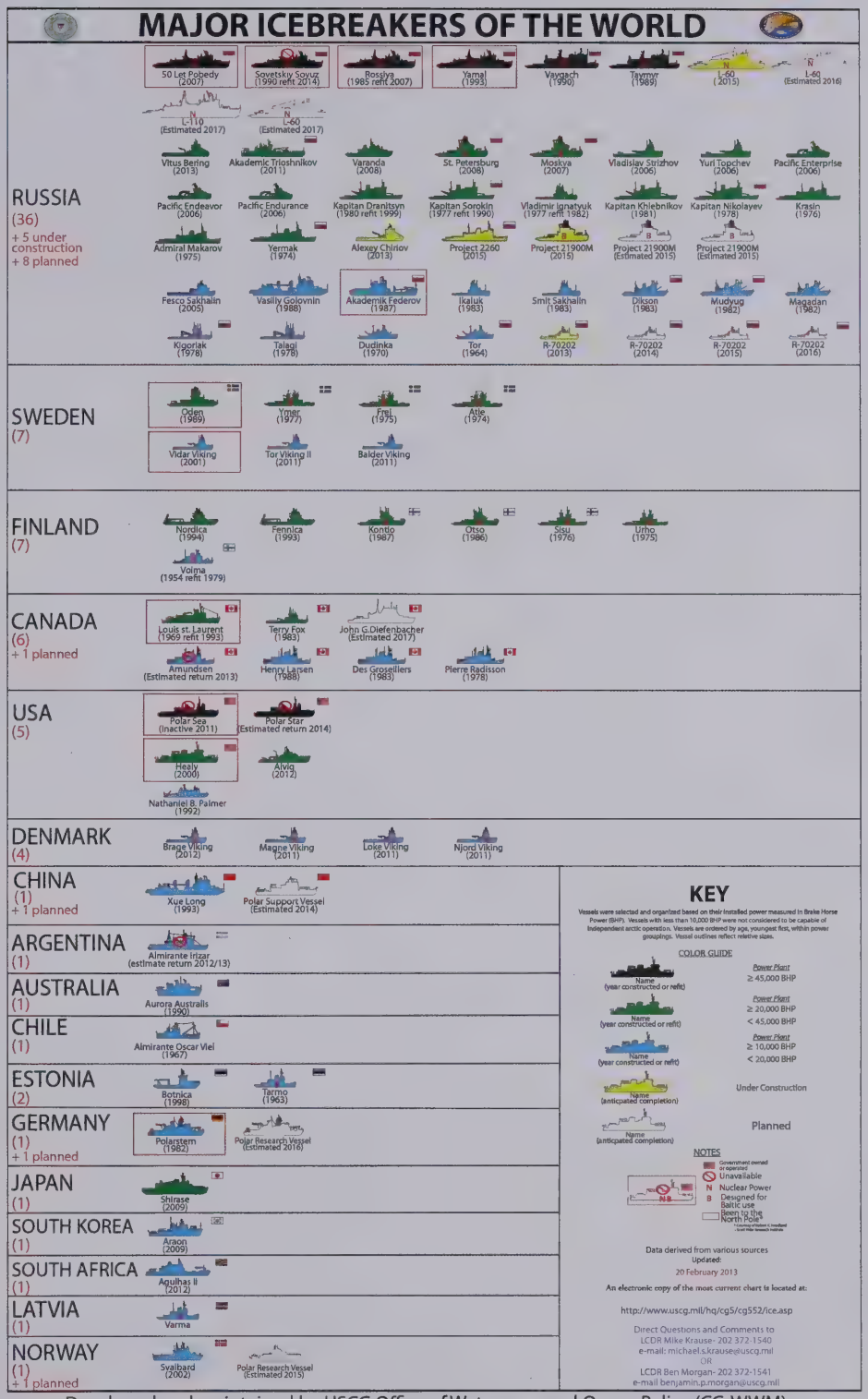
Unfortunately there are some who cycled off the crew before the ship could get under way.

"A lot of the guys have done a lot of work (on the *Polar Star*) and transferred out and not seen the end result," Skinner said. "Working on a ship for several years that doesn't get under way can seem like ... you are working for something that is not going anywhere."

The *Polar Star* has a crew of about 130, but about 150 people will be aboard during ice trials, including contractors who helped overhaul it.

If all goes well during ice trials, the *Polar Star* could be performing one of its primary missions in December: breaking into McMurdo Station in Ross Island, Antarctica. Since the *Polar Star* has been out of commission, the nation has had to use foreign icebreakers to resupply the U.S. science station.

"In my view, that's a shame," Pellissier said. ¶



Courtesy Dr. Lawson Brigham, University of Alaska, Fairbanks

Developed and maintained by USCG Office of Waterways and Ocean Policy (CG-WWM)

Editor's Note:

The above chart tells the tale, and it's a sad one to say the least. Sure, we can understand that Coast Guard authorities have to dance to the music played by the Department of Homeland Security, but that shouldn't deter persons knowledgeable in polar affairs from speaking out about the deplorable circumstance of this nation operating a one-icebreaker fleet. If, as we are wont to pontificate, the Arctic and the Antarctic are essential to our future prosperity and international status, then we had better hasten to acquire the specialized maritime assets that will achieve our goals. As is often said, "Do the math." ¶

ARCTIC
RESEARCH
LABORATORY
NAVAL RESEARCH
USCGC POLAR STAR WAGB 10
DEEPFREEZE
ANTARCTIC
SUPPORT
NOAA
FAIRWEATHER
MILITARY SEALIFT COMMAND PACIFIC
ICELAND
OPERATION

As a lifelong collector of cool stuff, I thought these patches were way over the top! Each one tells it own story of a piece of the Arctic or Antarctic, of an operation, ship or station. Goofy graphics or serious designs, they are now but a memory for many of those involved. I am moving and need to make room, so many of these are for sale. Before breaking up the collection I wanted to share them with *Polar Times* readers! — *Everen Brown*

Anyone interested in a closer inspection of Everen Brown's patch collection may contact him at **etbrown2002@excite.com**

Due South

by John Splettstoesser

Photo by Charles Swithinbank

Air Almaty Ilyushin-76TD landing on Union Glacier, Heritage Range, Antarctica (26 December 2010). The blue ice runway is operated by Antarctic Logistics and Expeditions LLC, a Salt Lake City-based company flying passengers and cargo from Punta Arenas, Chile. Ski-equipped aircraft carry expeditions and individuals farther to any part of Antarctica. ***(See July 2011* Polar Times, *p. 8)***

December 11, 2011, became noteworthy to many Norwegians on overland expeditions to the Geographic South Pole because the arrival included meeting the Prime Minister of Norway, Jens Stoltenberg, who traveled there to celebrate the 100th anniversary of Roald Amundsen's arrival on that date in 1911, and also proudly displayed an ice sculpture of a bust of Amundsen while at the Pole. The only other Heads of State that have visited the South Pole were Helen Clark (New Zealand Prime Minister) in 2007, and Prince Albert II of Monaco in 2009. About 12 Norwegian South Pole expeditions were planned for the event, according to the Norsk Polarinstitutt. Some of those expeditions and others are mentioned in "Due South" in the July 2011 issue of *The Polar Times*, p.14-15.

The 100th Anniversary of the attainment of the South Pole by Roald Amundsen in December 1911 and by Captain R.F. Scott in January 1912 was commemorated by many expeditions to the Pole as well as elsewhere on the continent. In Norway, an exhibit of life-size statues of Amundsen and his four companions who accompanied him to the South Pole—Olav Bjaaland, Helmer Hanssen, Sverre Hassel, and Oscar Wisting—was dedicated on December 14, 2011, next to the Fram Museum in Bygdøynes (Oslo), Norway.

In 'Due South'

In January 2012, I discussed shipborne activity in Antarctica and the initiation of the International Association of Antarctica Tour Operators (IAATO), "a member organization founded in 1991 to advocate, promote and practice safe and environmentally responsible private-sector travel to the Antarctic" (from IAATO website – www.iaato.org). The following discussion includes the logistics organizations that are in place to transport expeditioners and others to numerous places in the interior of Antarctica. Without those organizations, few, if any, land-based tourism events could occur.

Several IAATO members operated land tourism activities during the past several seasons, one of them, Adventure Network International (ANI), annually since 1985. ANI was a charter member when IAATO was formed in 1991, with an office in Vancouver at the time. The original company was purchased by Antarctic Logistics and Expeditions (ALE), in 2003, and that combination (ANI/ALE) is the major operator of land-based activities in Antarctica, providing support for adventure tourism and for science projects. ANI/ALE has a permanent office in Salt Lake City, Utah, U.S.A., and a seasonal office in Punta Arenas, Chile. The number of clients transported by ANI/ALE to Antarctica in 2012-13 was 313, involving 26 intercontinental flights from Punta Arenas, Chile, to its camp at Union Glacier in the interior. The 2012-13 operating season began on 24 October 2012, and ended 19 February 2013 when the camp was closed and secured for the 2013 winter.

In addition to these figures, IAATO estimates—on the basis of annually generated camping statistics—that approximately 15-20 persons are engaged on multi-day camping expeditions each season using other IAATO members as part of shipborne operations.

All activities, equipment and procedures used by IAATO Members in support of land-based tourism are reported to the relevant national authority, detailed in environmental documentation and included in Advance Notification.

Land-Based Activities: ANI/ALE

www.adventure-network.com; www.antarctic-logistics.com

ANI/ALE's operations are entirely supported by air. Aircraft are chartered each season for intercontinental flights, and ski aircraft for flights within Antarctica.

ANI/ALE had operated a seasonal intercontinental air service beginning in 1985 from early November to late January between Punta Arenas, Chile, and Patriot Hills, Heritage Range, Ellsworth Mountains, landing large transport aircraft, such as Ilyushin IL-76TD or Lockheed Hercules L-382G on blue-ice runways. The blue-ice runway was certified by Dirección General de Aeronáutica Civil (DGAC) in 1987. Ski-aircraft, typically De Havilland DHC-6 Twin Otter, are used to transport clients, expeditions and research groups within Antarctica.

The blue-ice runway at Patriot Hills for landing intercontinental flights was superseded in the 2010-11 austral summer with the opening of a new blue-ice runway at Union Glacier, also in the Heritage Range and about 70 km northwest of Patriot Hills. The new runway has also been certified by Chilean authorities, in November 2008 (Exemption Certificate No. 03241 for a public aerodrome). ALE/ANI also operates Basler aircraft (Douglas DC-3-TP67),

and a variety of tractors and snow blowers for aircraft support such as loading/unloading, placement of caches, and for supporting long-range expeditions and overland traverses. The camp at Union Glacier is located at 79°45'S, 83°14'W, 8 km from the runway at the base of Mount Rossman. The completely refurbished base camp provides facilities for up to 80 guests. Attractions for clients introduced to Antarctica include visits to the Geographic South Pole, mountaineering at nearby Vinson Massif and adjacent peaks (the highest peaks in Antarctica), emperor penguin colonies, and cross-country trekking. Since records were kept of Vinson climbers, some 1,800 individuals supported by ANI/ALE have made the summit. A number of those are 'Seven-Summit' climbers, achieving the highest peaks on all seven continents. Mt. Vinson, part of Vinson Massif, is 16,049 ft (4892 m) in elevation, and is attractive because the eight highest peaks in Antarctica are in the same general area. By comparison, and just as popular, Mount Everest (29,021 ft/8848 m) has had 4,559 climbers who have summitted as of 2009, as well as 216 deaths. A more recent service offered for climbers by ANI/ALE is 'Seven Volcanic Summits', with Mount Sidley the highest volcano in Antarctica at 14,058 ft (4285 m). Mt. Sidley is one of five extinct volcanoes in the Executive Committee Range in Marie Byrd Land.

In recent years, ANI/ALE has extended their capability to provide logistic support for research activities, including large-scale projects. Their unique heavy lift ability to this sector of Antarctica has allowed the transport and deployment of large items of field equipment. ANI/ALE delivered the entire package for the Subglacial Lake Ellsworth project to site, totalling some 80 MT of equipment by the combination by flight to Union Glacier and overland traverse.. During February 2013, 166 MT of supplies and fuel was air-dropped to Belgrano II (Argentine) station. A number of other research projects are supported each season.

The numbers of clients taken by ANI/ALE to Antarctica over the previous decade have shown a gradual increase from 159 in 2001-02 to a high of 270 in 2008-09, to as many as 348 most recently during the Amundsen-Scott centenary season. These, and related figures and discussion of annual activities are in the public section of the IAATO website www.iaato.org under "IAATO and the Antarctic Treaty", which lists Current and Past Information Papers tabled at Antarctic Treaty Consultative Meetings (ATCM). ATCM XXXIV at Buenos Aires in 2011, for example, lists IP 106 rev. 1, "Overview of the 2010-11 Season and Preliminary Estimates for the 2011-12 Season," with discussion of a section on "Commercial Land Tourism." Figures for the 2011-12 season are included in the IAATO Information Paper tabled at ATCM XXXV in Hobart in June 2012. IPs specifically on Land-Based Tourism can be found by searching earlier ATCM papers, such as IP 101, "Land-Based Tourism Facilities," ATCM XXXII—Baltimore 2009, and others in earlier years.

The Antarctic Company (TAC), White Desert (WDL), and Antarctic Logistics Center International (ALCI)

www.antarctic-company.com; www.white-desert.com; www.alci.info

Additional logistics organizations have been active in land-based tourism since 2004, beginning with The Antarctic Company (TAC). Now a member of IAATO since 2009, TAC specializes in marketing and logistical support of Non-Governmental organizations (NGOs) and tourist groups to the Antarctic. With headquarters in Cape Town, the company also uses Ilyushin IL-76 aircraft for access to the continent, flying from Cape Town to a landing strip known as Novo, located at 70°46'S, 11°50'E, near the Russian station Novolazarevskaya in Queen Maud Land. From there, clients can be transported by small aircraft to the South Pole, mountaineering sites, and other locations. The Novo runway is shared with Antarctic Logistics Center International (ALCI), a company that has been operational since 2001. TAC uses Toyota Hiluxes, modified for Antarctic travel, to transport clients and cargo in the area of Wohlthat Massif, the Lake Unter-see region, Gruber Mountains, and the South Pole.

Another operator is White Desert (referred to as WDL), which operated in Antarctica for the sixth consecutive season and recently as an IAATO associate member. Flights and logistics for White Desert are coordinated through TAC.

Land-based companies employ experienced staff and guides, over 80% of which have worked previously in Antarctica. Staff and guides assist in the preparation of policies and guidelines, and ensure their implementation in Antarctica.

It is apparent that the prospects of adventurers looking for new places can be satisfied by means of a variety of private companies using two gateway ports (Punta Arenas, Chile and Cape Town, South Africa), and two major staging points in the interior of Antarctica for a variety of activities, whether it is mountaineering, visits to Emperor Penguin colonies, or simply reaching the Geographic South Pole. The key ingredients for these activities are reliable and experienced companies with excellent safety records, and also the ability to accommodate Treaty Nations in science programs. ¶

Credit Where Credit is Due

Credit for much, if not most, of this issue of *The Polar Times* goes to John Splettstoesser, who gathered material and worked closely with authors and contributors while the Editorial team was focused on completing the anniversary edition—to which John was also a great contributor! ¶

Documenting Change in the Earth's Cryosphere: A Beginning

by Richard S. Williams, Jr., Ph.D.

On 23 July 1972, the first Earth Resources Technology Satellite (ERTS-1) was successfully launched into Earth orbit by NASA, in collaboration with the U.S. Geological Survey (USGS); the motto for the ERTS Program was "For the Benefit of All Mankind." ERTS-1, later renamed Landsat 1 by NASA, was followed by six more satellites; the latest in the series, Landsat 8, was launched on 11 February 2013 (Landsat 6 failed to achieve orbit). Images from Landsat 1 provided scientists from all nations "time-lapse" images to map and monitor changes occurring on the Earth's surface at a spatial resolution sufficient to make quantitative measurements of changes in area of many natural (e.g., glaciers) and cultural (e.g., deforestation) phenomena.

For six years I was assigned to the U.S. Air Force Cambridge Research Laboratories, Hanscom Field, MA, three years on active duty as a First Lieutenant project officer on the first ski-equipped JC-130-A/D aircraft conducting airborne remote-sensing surveys worldwide of suitable natural landing sites and other regions such as Iceland, and three years as a civilian Branch Chief, Terrestrial Sciences Lab. In 1971, I transferred to the USGS where I joined the EROS Program in the Office of the Director, Willam T. Pecora, who was on the staff of the Secretary of the Interior, Stuart L. Udall, to initiate the ERTS Program. During my active-duty in the USAF, I was awarded the Airman's Medal; I also applied to NASA's Scientist-Astronaut Program, but, even though NASA waived the vision requirement, the USAF would not ("Catch 22"). However, as a geologist with first-hand knowledge of Iceland's volcanoes and glaciers from field work and remote-sensing surveys in Iceland and other regions, I quickly realized that Landsat images could be used to compile a global "base-line" of all the Earth's glaciers (fig. 1), from its smallest, a mountain glacier (1 km^2), to its largest, the Antarctic ice sheet (13,586,400 km^2). Also, by chance—and extraordinary good luck—while at the University of Michigan I had taken a course in glaciology taught by Charles Swithinbank and Jim Zumberge!

In the mid-1970s, I established the Glacier Studies Project at the USGS to compile an 11-volume Satellite Image Atlas of Glaciers of the World (USGS Professional Paper series 1386-A-K). I hired Jane G. Ferrigno as a co-editor, and enlisted the assistance of what eventually numbered 115 geologists and glaciologists, representing 20 nations and 79 scientific institutions, to author entire volumes or sections of volumes. Ten volumes, including the synthesis volume, *State of the Earth's Cryosphere at the Beginning of the 21st Century: Glaciers, Global Snow Cover, Floating Ice, and Permafrost and Periglacial Environments* (including a plate of the Earth's Dynamic Cryosphere and 8 Supplemental Cryosphere Notes), have been published; the first in 1988, Antarctica, with map (1386-B) by Charles Swithinbank. The final volume, Glaciers of Iceland, with map (1386-D), will be published in 2014. All volumes are available in print and online at http://pubs.usgs.gov/pp/p1386/. During the 30-year duration of the project, under the direction of Jane Ferrigno and with the GIS expertise of Kevin M. Foley, we also began to publish a

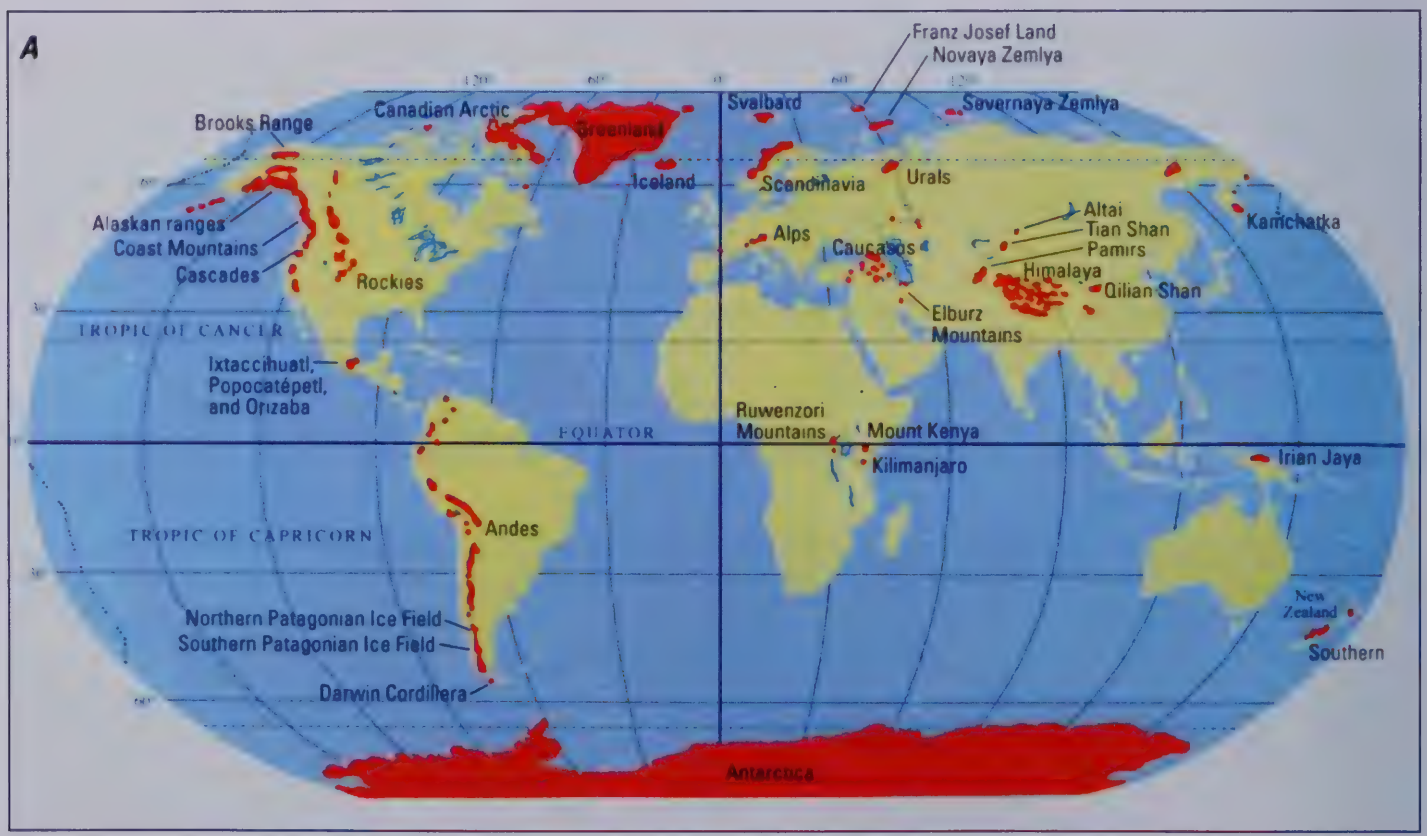


Figure 1—Geographic distribution of the principal glacierized regions (red) on Earth. Modified from Canadian Geographic (Shilts and others, 1998, figure on p. 52). [Figure 2A, p. A72, in USGS Prof. Paper 1386-A: http://pubs.usgs.gov/pp/p1386a/ see Figure Gallery for Part A-2, Glaciers]

series of *Coastal-Change and Glaciological Maps of Antarctica* (USGS Miscellaneous Geologic Investigations map series I-2600-A); Charles Swithinbank mapped two cryospheric coastlines—floating ice (ice fronts) and grounded ice (ice walls)—of the entire continent from Landsat MSS and TM images. Ten maps in the series are available in print and online at http://pubs.usgs.gov/imap/2600/; the latest map, the Amery Ice Shelf area in East Antarctica (I-2600-Q) was published in 2013. Except for the synthesis volume (1386-A), which addresses changes in all four components of the Earth's cryosphere: glaciers, snow cover, floating ice (sea ice and lake ice and river ice), and permafrost, the other 10 volumes are geographically specific and are focused on 10 glacierized regions of the Earth (fig.1).

The continuing buildup of greenhouse gases in the Earth's atmosphere, now exceeding a carbon-dioxide concentration of 400 ppmv at Mauna Loa, Hawai'i, for the first time in 3.3 million years (during the Pliocene Epoch). The global warming of the Earth's atmosphere, land, and oceans has a pronounced impact on the global hydrologic cycle, especially on the recession (fig. 2) and melting of glaciers and concomitant rise in sea level (50:50 expansion of warmer ocean waters and runoff of meltwater from glaciers). In fact, the rise in eustatic sea level worldwide, now at a rate of 4 mm per year, is a global glaciological hazard. The slow, inexorable inundation of low-lying islands and coastal regions will ultimately displace tens of millions of humans who live in such regions, such as deltas; it will also require tens of billions of dollars to rebuild the infrastructure on higher ground. For the United States alone, relocation of people and rebuilding of infrastructure (e.g., roads, airports, buildings, water-supply and wastewater facilities, etc.) could eventually become one of the largest items in the annual Federal and State budgets.

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The eleven Glacier Atlas volumes will serve as an historical "base-line" reference for future measuring of the areal changes in the Earth's glaciers at the end of the 20th/beginning of the 21st centuries. The *Coastal-Change and Glaciological Maps of Antarctica* will also serve as an historical record of the recession and other changes in the cryospheric coast of Antarctica from the late 20th to the early 21st centuries, especially the areal loss of its fringing ice shelves. ¶

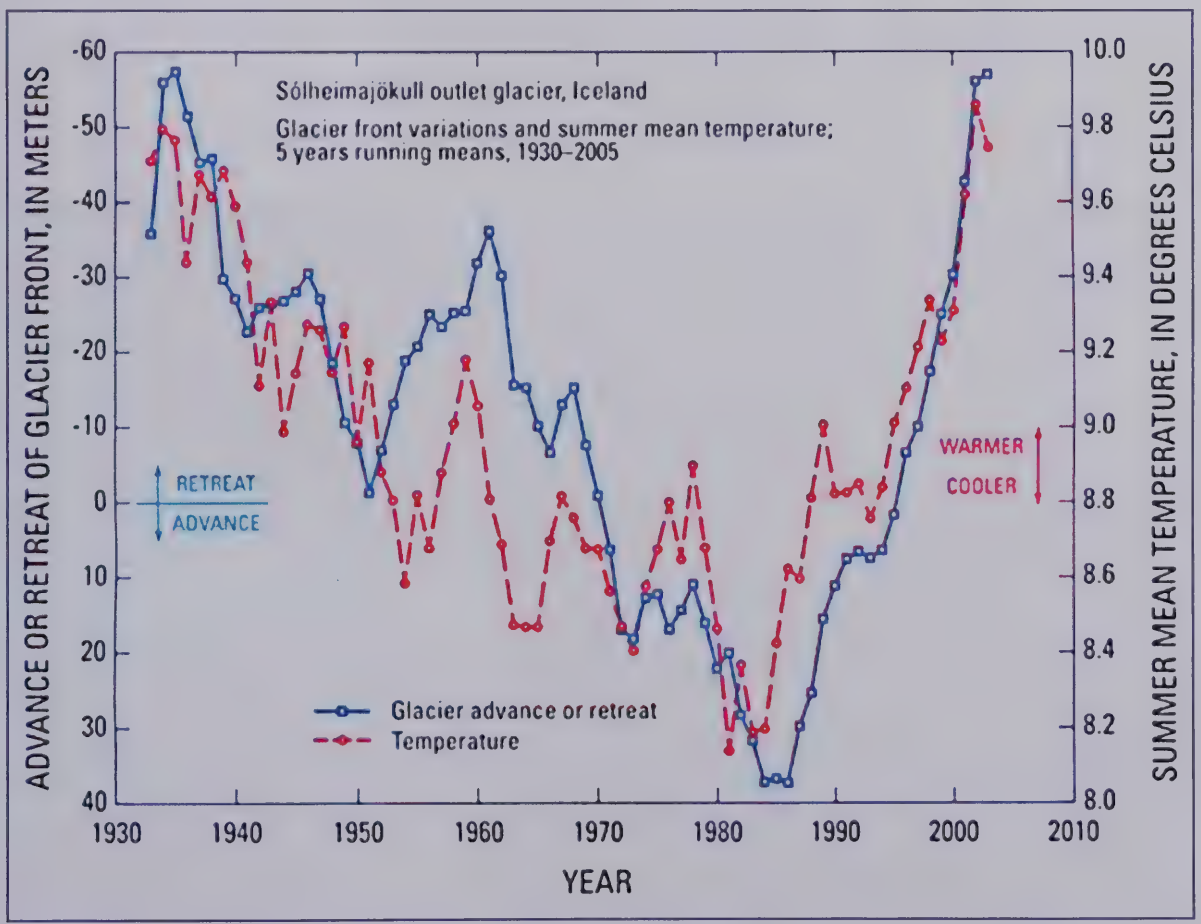

Figure 2—A, Annual variations of the terminus of Sólheimajökull outlet glacier (blue), southern Iceland, and the mean summer (May–September) temperature (red) at the Stykkishólmur meteorological station, northwestern Iceland, 5-year running mean, 1930-2005. Modified from Sigurðsson (2006, p. 89, fig.2). The vertical scale is adjusted to facilitate comparison. B, Oblique aerial photograph of Sólheimajökull on 30 October 1985 by Oddur Sigurðsson, Icelandic Meteorological Office. (From *Geographic Names of Iceland's Glaciers: Historic and Modern* (Sigurðsson and Williams, 2008, cover page and p. 181, fig. 171, http:///pubs.usgs.gov/pp/p1746/)). [Fig. 22 A and B, p. A118, in USGS Prof. Paper 1386-A: http://pubs.usgs.gov/pp/p1386a/ see Figure Gallery for Part A-2, Glaciers]

Up, Up and Away...Well, Not Too Far Away!

by Cliff Bekkedahl

By now all should know that the CO_2 level in the atmosphere has reached 400PPM (and climbing). But in a recent review of clippings and articles from our eagle-eyed contributors, it appears that a lot more stuff is being spewed up and away and, while not news *per se*, the impact of these various compounds and particulates is being reevaluated.

Dust, plain old dust

A recent study finds that Earth is twice as dusty compared with the 19th century. No, not the kind you Swifter up—pet hair, human skin, lint, fiber, food debris—but rather, sand and soil that powerful winds lift off the world's deserts, notably the Sahara, and which travel in wind currents that disperse the dust worldwide. Globally this dust causes a net drop in solar irradiance which in turn creates a net cooling effect of as much as 0.2°F. Hey, every little bit helps!

Volcanic bromine destroys ozone layer

Scientists have studied rocks formed from volcanic eruptions in Central America over the last 70,000 years. These rocks contained bromine and chlorine and, from this latitude, an eruption shoots material straight up 16 kilometers into the ozone layer. Bromine is said to be 60 times as efficient at destroying ozone as is chlorine.

Black carbon

Soot particles are said to be far more powerful agents of global warming than previously thought. Recent studies estimate that their heat-trapping power is almost double that determined in 2007. Black carbon is released primarily by diesel engines and by primitive cook stoves and kerosene lamps in poorer nations. Black carbon's journey in the atmosphere is short-lived, perhaps a week to ten days, but its location—for example, near a glacier—could have a major impact.

Methane

None of the attendees at the recent APS Symposium will forget the dire findings and projections of Dr. Kevin Schaefer from the University of Colorado's National Snow and Ice Data Center. Dr. Schaefer studies the impact of thawing permafrost which releases large quantities of methane into the atmosphere, thus aggravating the warming trends caused by CO_2 and other man-sourced pollutants. Here, again, the issue of irreversibility raises its ugly head. Schaefer contends that unless there is a cessation in the thawing of permafrost, which he sees as unlikely, rising CO_2 levels will continue to reinforce the greenhouse phenomenon of global warming, hence continuing the melting of permafrost, all of which fuels a never-ending, self-sustaining cycle.

Two "irrs" dominate the discussion—irreversible and irrefutable!! ¶

***Chile's Air Force/Associated Press*—In this picture released by Chile's Air Force, smoke billows from a Chinese factory fishing ship *Kai Xin* just off the coast of Antarctica, Wednesday, April 17, 2013. Chilean authorities say around 90 crew members had been rescued from the burning ship at this point by the crew of the Norwegian ship *Juvel*, and Chile's military said it was ready to intervene if necessary to prevent an ecological disaster.**

Byrd Archival Program Acquires Lockhart Antarctic Collection

The Byrd Polar Research Center Archival Program is pleased to announce the recent acquisition of the Ernest E. Lockhart Antarctic Collection, a gift of the Helen S. Lockhart Trust. The collection consists of five cubic feet of materials that document Lockhart's experience as a member of the U.S. Antarctic Service Expedition, 1939-1941.

Ernest Earl Lockhart was born in Boston, Massachusetts (USA) on September 10, 1912. He grew up in the Hyde Park section of Boston. Lockhart was the youngest of three children of Clinton Daniel Lockhart and Celeste Althea Westhaver, who both emigrated from Nova Scotia, Canada. E.E. Lockhart was educated in the Boston public schools, at the Chauncey Hall School, and then at Massachusetts Institute of Technology, where he earned three degrees, culminating with a PhD in biochemistry in 1938.

Following a year of study on fellowship at the Biochemical Institute in Stockholm, Sweden, E.E. Lockhart served as the physiologist on the United States Antarctic Service Expedition of 1939-1941, commanded by Richard E. Byrd. A memorable experience on the expedition was a four-month, 400-mile field trip by dog team. He was the radio operator for his four-man party. Mount Lockhart, a mountain in the Fosdick range, is named after him.

The collection is a rich resource for researchers and scholars, and includes the biographical information about Lockhart, including diary and journal entries, correspondence, clippings, articles, photographs, films and artifacts. The complete finding aid for the collection can be found at http://rave.ohiolink.edu/archives/ead/OhCoUBP0006.

For more information about the Lockhart Antarctic Collection, as well as any of the other polar collections held the Byrd Polar Research Center Archival program, please visit go.osu.edu/polararchives, or contact the Polar Curator Laura Kissel at kissel.4@osu.edu. ¶

NASA AIM Satellite Spots First Noctilucent Clouds of 2013

***redOrbit Staff & Wire Reports,* 9 June** 2013—Noctilucent clouds (NLCs), tenuous cloud-like phenomena that form every summer in the skies above the North Pole, are forming earlier than usual, NASA officials confirmed on Friday.

According to the US space agency, NLCs are formed when "ice crystals begin to cling to the smoky remains of meteors, forming electric-blue clouds with tendrils that ripple hypnotically against the sunset sky."

These clouds, which NASA calls "a delight for high-latitude sky watchers," were spotted by NASA's AIM spacecraft on May 13th—one week earlier than previous seasons, and possibly earlier than ever before, Cora Randall of the Laboratory for Atmospheric and Space Physics at the University of Colorado said in a statement.

The early start has scientists puzzled because of the solar cycle. Experts have long known that NLCs typically peak during solar minimum and are at their lowest during solar maximum. This year, however, the clouds have arrived early, even though the fact that the solar cycle is near its minimum suggests that they should have started later.

Noctilucent clouds, which were first observed in the middle of the 19th century, are typically seen in the sunset sky. They were first spotted following the eruption of the Krakatoa volcano, following the spread of volcanic ash throughout the atmosphere. In fact, according to NASA, some experts initially believed that the NLCs were a side-effect of the eruption. However, once the volcano quieted down, the clouds remained.

"They've been with us ever since," Randall said. "Not only that, they are spreading."

The causes of noctilucent clouds were still a mystery when the AIM satellite launched back in 2007, NASA said. Although scientists knew they formed nearly 52 miles above the Earth's surface, it wasn't until AIM began its mission that they were able to connect some of the dots and learn more about the nature of NLCs.

"It turns out that meteoroids play an important role in the formation of NLCs," James Russell, the principal investigator of AIM and a professor at Hampton University, explained. "Specks of debris from disintegrating meteors act as nucleating points where water molecules can gather and crystallize."

As it turns out, the clouds appear during the summer months because it's during that time that water molecules rise from the lower atmosphere and mix with the so-called meteor smoke. In addition, the upper atmosphere is at its coldest during the summer. During the 1800s, NLCs were typically only observable in high latitudes, but they have spread southward in recent years – a phenomenon some researchers have linked to climate change.

"When methane makes its way into the upper atmosphere, it is oxidized by a complex series of reactions to form water vapor. This extra water vapor is then available to grow ice crystals for NLCs," Russell said. "Half-a-world away from where the northern NLCs are forming, strong winds in the southern stratosphere are altering global circulation patterns. This year more water vapor is being pushed into the high atmosphere where NLCs love to form, and the air there is getting colder."

"All of this has come as an interesting surprise for us," he added. "When we launched AIM, our interest was in the clouds themselves. But now NLCs are teaching us about connections between different layers of the atmosphere that operate over great distances. Our ability to study these connections will surely lead to new understanding about how our atmosphere works." ¶

An International Antarctic Station

by John Splettstoesser

An interesting concept has been proposed by Dr. Alan Hemmings, a specialist in Antarctic governance and environmental management. He lives in Canberra, Australia, and has a position as Associate Professor at New Zealand's Gateway Antarctica, University of Canterbury. His background includes two winters with the British Antarctic Survey, and member of delegations to the Antarctic Treaty Consultative Meetings and CCAMLR. Given that experience, he has considerable knowledge of the Antarctic Treaty and its Articles, and some of the reasons why there are almost no joint stations operated by signatories, at the expense of additional and unnecessary logistic costs, as well as consideration of environmental footprint. Of the 110 current Antarctic main facilities in the Antarctic Treaty area, only two are joint stations, and both involve only two states—Law-Racovita (Australia and Romania) and Concordia (France and Italy). Pre-treaty joint activities include the Norwegian-British-Swedish Expedition, 1949-52, located at Maudheim in Queen Maud Land, Hallett Station (U.S. and New Zealand) and Wilkes (U.S. and Australia), the latter two for a short period of time. Going back further in time, some of the expeditions for exploration but not necessarily for science, were multinational, including the Belgica, headed by Adrien de Gerlache (Belgium), along with Roald Amundsen (Norway), Dr. Frederick Cook (U.S.), Emile Racovitza (Romania), Henryk Arctowski (Poland), and a Russian lab assistant. The British Antarctic Expedition, headed by Carsten Borchgrevink (Norway), also included an Australian and two Finns.

The Antarctic Treaty was a landmark for its content, resolving seven territorial claims on the continent into a situation of the claimant countries agreeing to non-enforcement of those areas, allowing free access, but not relinquishing the claims. The Treaty also allows for exchange programs for scientists to visit and conduct research at stations of other countries. Nevertheless, the placement of stations has included clustering in some cases, particularly for reasons of shared logistics (15 facilities operated by nine different countries on King George Island), and also for reasons of situating stations in their claimed areas. Antarctica is considered to be one of the four Global Commons, areas of the planet that no one person or state may own or control. The other three include Oceans and deep seabed, Outer Space, and Weather and Climate (the Atmosphere). The International Space Station thus forms an interesting counterpoint to the present limited development of joint facilities in Antarctica. Some of the same states engaged in Antarctica have managed to collaborate on an International Space Station. If joint research facilities have become possible in space, why not also in Antarctica? The many difficulties inherent in developing an International Space Station include some which appear also significant in Antarctica. Issues of ownership and responsibility for equipment, and jurisdiction and control of personnel in the station become common to both Antarctica and in space. The critical factor appears to be the unresolved situation of territorial sovereignty and consequential jurisdiction in Antarctica. It appears that scientific cooperation is secondary to national autonomy in the selection of locations for jointly operated stations. ¶ *Based on an article by Alan Hemmings, "Why did we get an International Space Station before an International Antarctic Station,"* The Polar Journal, *June 2011, v.1, no. 1, p. 5-16.*

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Postscript: In 2012, the Director of the Bulgarian Antarctic Institute suggested that in 50 years' time, the Antarctic will host permanent villages cooperating with scientists and the tourism industry. The concept was discussed at a meeting of COMNAP and also SCAR. Bulgaria has had a station in Antarctica since 1988 on Livingston Island, South Shetland Islands—St. Kliment Ohridski.

Also in 2012, Iran announced that it will establish a permanent station in Antarctica in three years' time.

Expedition Abandons Antarctic Winter Crossing Attempt

***LiveScience "In Brief,"* 20 June 2013, by Andrea Thompson**—An expedition aimed at making the first crossing of the Antarctica continent on skis during the pitch-black winter has been called off due to a compounding of technical difficulties and the team's arrival at apparently highly dangerous terrain, according to a release from the expedition, called The Coldest Journey.

The expedition—already without their leader, adventurer Sir Ranulph Fiennes, who was forced to leave Antarctica after he developed frostbite—has come across a crevasse field that is much larger than any they have encountered so far, and appears to extend for about 60 miles (100 kilometers) in front of them, according to the statement. The crevasses "could easily swallow our vehicles and are deceptively hard to spot in the darkness and snow cover," said expedition leader Brian Newham from Antarctica. The team's resources are already depleted more than was expected by this point, because of the difficulties of the journey and dipping temperatures taking a toll on equipment.

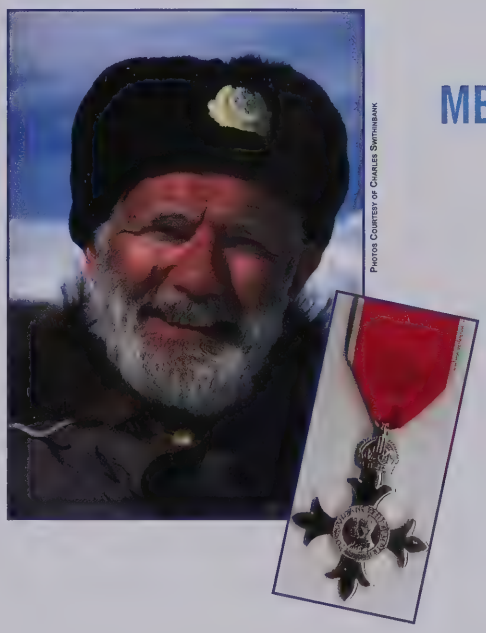
> *"The crevasses could easily swallow our vehicles..."*
> — *Brian Newham*

"In my judgment there is no real choice, I believe it would be reckless and irresponsible to press on and risk the obvious dangers while incurring excessive fuel consumption," Newham said in the statement. Instead, the team will be focusing on the science they intend to do while on the southernmost continent, including a study of the effects of isolation and the physiological impacts of the harsh environment on the team. ¶

MEMBER NOTES

Medals Awarded to Members:
MBE for Swithinbank, APS for Shinn

The U.K. Honours Committee has awarded an MBE (Member of the Order of the British Empire) in 2013 to Charles Swithinbank for exploration and research in the Antarctic, stating, "A world-reknowned glaciologist, during a period of more than six decades, Charles has seen more of Antarctica than any living person."



Photos Courtesy of Charles Swithinbank

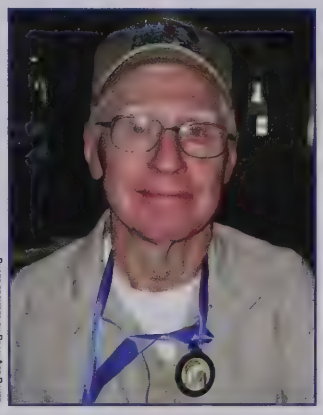


Photo provided by Billy-Ace Baker

Conrad "Gus" Shinn was recently re-awarded his honorary membership medal, which had somehow separated itself from his possession and was rediscovered during the APS symposium last April. The medal was awarded to Gus—this time—by Billy-Ace Baker during a meeting of the Old Antarctic Explorers Association Gulf Coast Group Chapter.

Today's American Polar Society Honorary Members

This is an updated list of the members of the American Polar Society who have been recognized for their service and achievements in polar affairs and have been designated as, HONORARY MEMBERS. These are men and women drawn from a broad spectrum of polar activity, scientific, academic, military, explorers, builders and others who have shared the dreams, challenges and wonderment unique to the polar world and who have served and contributed in the polar environment in very special ways.

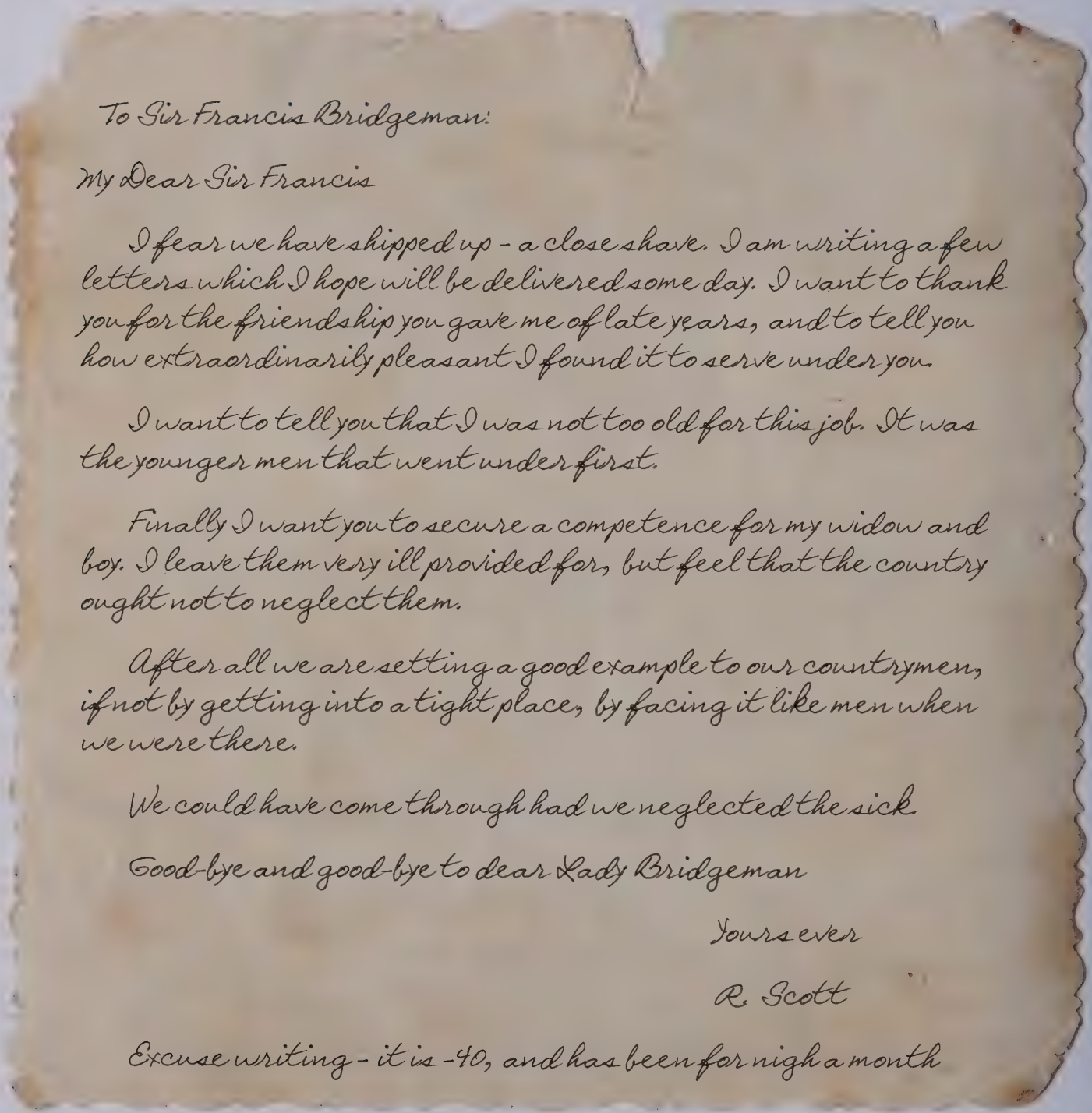
Dr. Knut Aagaard
CAPT Cliff L. Bekkedahl USN (Ret.)
Dr. Charles R. Bentley
Dr. Max C. Brewer
Dr. Lawson Brigham
Ruby Buck
Dr. David H. Elliot
Dr. David Gallo
Dr. Arnold L. Gordon
Dr. Tony Gow
Dr. Kenneth Hunkins
Dr. Paul A. Mayewski
John H. Nicholson
Dr. Robert H. Rutford
R. Tucker Scully
LCDR Conrad "Gus" Shinn USN (Ret)
Dr. Susan Solomon
John Splettstoesser
VADM George P. Steele USN (ret)
Will Steger
Dr. Charles Swithinbank
Capt. P. R. "Dick" Taylor
Dr. Lonnie Thompson
Dr. Willy F. Weeks

Chin Up at 40-Below

Robert Falcon Scott wrote eight letters as death closed in. The most recently released, as of late March 2013, was addressed to his former commanding officer, Sir Lord Francis Bridgeman. The letter was privately owned for a century but has been bought by the Scott Polar Research Institute at Cambridge for £78,816.

Until the recent acquisition, the note to Sir Francis was one of two of Scott's last letters in private hands. The other, to Edgar Speyer, was sold last year for £165,000. Letters that Scott wrote to his wife, Kathleen, and to Oriana Wilson, Emily Bower, Sir Reginald Smith and George Egerton are already held by the Scott Institute. The eighth, addressed to his friend, Peter Pan author Sir James Matthew Barrie, appears to have been lost.

From the text you will see that Scott wanted it understood that he was not too old to have led a trek into the unknown and also that he feared for his family's financial condition. He asked Sir Francis to secure a "competence" for his widow and son. ¶



To Sir Francis Bridgeman:

My Dear Sir Francis

I fear we have shipped up - a close shave. I am writing a few letters which I hope will be delivered some day. I want to thank you for the friendship you gave me of late years, and to tell you how extraordinarily pleasant I found it to serve under you.

I want to tell you that I was not too old for this job. It was the younger men that went under first.

Finally I want you to secure a competence for my widow and boy. I leave them very ill provided for, but feel that the country ought not to neglect them.

After all we are setting a good example to our countrymen, if not by getting into a tight place, by facing it like men when we were there.

We could have come through had we neglected the sick.

Good-bye and good-bye to dear Lady Bridgeman

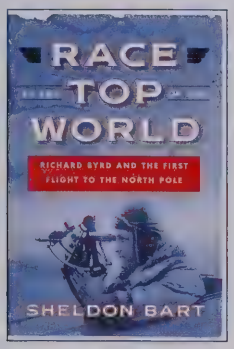
Yours ever

R. Scott

Excuse writing - it is -40, and has been for nigh a month

(Facsimile only; not a reproduction)

Book Reviews



Coming Soon:
Race to the Top of the World: Richard Byrd and First Flight to the North Pole

by Sheldon Bart
Regnery, Washinton, DC, 328 pages

Pre-reviewed by Cliff Bekkedahl

A book by Sheldon Bart, one of our own, focuses on the aviation exploits of Richard E. Byrd at the mid-point of the 1920s.

In the final throes of publication and with a release date scheduled for early Fall 2013, Sheldon has kindly offered us a behind-the-scenes glimpse of a book about Byrd and his flight north to the Pole in1926 and his transatlantic flight in 1927 that ended safely in the water off Normandy, France.

This slice of the adventuresome life of Richard Byrd was carved out of a larger effort initiated by Sheldon Bart after he visited the Byrd archives at Ohio State University during the first symposium held by The American Polar Society in 1998. He recalls the astonishing number and size of boxes of Byrd papers and memorabilia that were stored and only loosely cataloged (550 boxes, each the size of orange crates). Byrd saved everything, and Sheldon sensed that he did so knowing that, sometime in the future, serious researchers would be looking to fairly resolve some of the controversies that enveloped Byrd's reputation late in his life.

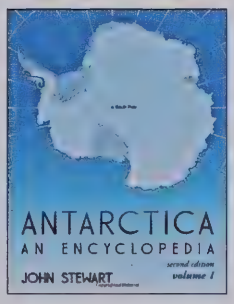
Sheldon's original ambition was to write a full-fledged biography of Admiral Byrd and his expeditions north and south. Editors at Simon and Schuster embraced the idea, and Sheldon was given a contract with a modest advance. He set to work, spending much of his time on campus at the Byrd Polar Research Center and many other archives.

The calendar is not a writer's best friend, and modest advances seem to melt faster than icebergs at the equator. Sheldon and Simon and Schuster parted company, not altogether easily, after he had produced 670 pages of a projected manuscript of about 1000 pages. On the street, so to speak, he soon recognized that no publisher would entertain a manuscript of that dimension about someone no longer a household name—especially if it was submitted by an unknown author. But he also realized that buried in that work was a book of half the size that would afford a biographical portrait of Byrd that would dispel much, if not most, of the misinformation and adverse criticism of Byrd's accomplishments as an explorer and leader.

Sheldon set himself to the task of extracting the stories of Byrd's North Pole flight and the transatlantic flight to France. Editors at Regnery Publishing entertained a proposal and agreed with Sheldon's approach; so, come early this Fall, the book will be published. *The Polar Times* will review the book in the January 2014 issue.

In our interview with Sheldon, we raised the question of how does one go about gaining a publisher's attention and consideration of a manuscript. "The publishing industry doesn't work the way we think it does," he said. "It's not about writing. It's about attention—the amount of attention being paid to a subject at any given moment by the society at large." The prolonged recession and the downward trend in print publication have combined to exacerbate this dynamic…except when a small house or daring editor takes a major risk and catches a wave. Sheldon cites the early '90s Shackleton mania that spawned a flood of Shackleton books and companion works on other explorers of the era. This phenomenon subsided (or the bubble burst!) and, since then, publishers have shown very little interest in taking a risk with a polar book. The Shackleton Centennial will occur in 2015, and Sheldon foresees another round of Shackleton and /or polar explorers books.

Publishers are perishing, competition from the e-publishing world is ruthless, and the bottom line is the sole consideration if a publishing house is to survive. "Me, too" is the business strategy, and a title like *Fifty Shades of Ice* has a better chance of getting published than *The Life and Times of Richard E. Byrd*. So, beware aspiring authors—a call to Sheldon could be instructive. ¶



Antarctica: An Encyclopedia

by John Stewart
(McFarland & Co., 2011, 2 vols., 1,758pp, $495.00)

Reviewed by Jeff Rubin

Most encyclopedias are written by dozens, if not hundreds, of specialized researchers, each one an expert in her or his field. *Antarctica: An Encyclopedia* is different—the production of a single person.

John Stewart, author of this 10-pound, two-volume marvel that resembles a pair of hardcover Manhattan phone books, is a Scottish Australian raised in the Middle East who now lives in West Jefferson, North Carolina. He has never been south of Tasmania.

But he has written encyclopedic reference works on topics as varied as African states and rulers, Broadway musicals, the British Empire, Italian films, and the moons of the solar system, and he is clearly an indefatigable researcher. The process of putting together this book, Stewart writes, was a "four and a half year, 15-hour a day, every day effort."

How does one review a book of 1,758 pages, especially when those pages are 8-1/2 by 11 inches, triple columned, and closely filled with type that, while gratifyingly easy to read, could hardly be called large?

Carefully. Strategically. Slowly.

Even after more than a year, it has not been practical to read, or even skim, all 2.2 million words. But after long study of this second edition (the first, published in 1990, had 15,000 entries; the present, 30,000), several things became apparent.

Like its predecessor, the second edition owes a great debt to the Antarctic gazetteers produced during recent decades by the U.S., U.K., Australia, New Zealand, Russia, France and other countries.

Like its predecessor, it also owes a great debt to Robert Headland's magisterial *Chronology of Antarctic Exploration,* the second edition of which was published in 2009 (see *The Polar Times*, July 2009).

The first debt is explicitly acknowledged; the second, merely implied.

But Stewart goes far beyond merely re-organizing the nearly overwhelming amount of data in all of these works. To be sure, he has rearranged it to suit his own purposes, consolidating and aggregating information that Headland, in particular, organized differently to a different end.

Yes, the geographic entries—which make up a majority of the *Encyclopedia*—can be found online in the SCAR Composite Gazetteer of Antarctica (https://data.aad.gov.au/aadc/gaz/scar/), which over 21 years to date has compiled 37,006 names corresponding to 19,006 features. The SCAR Gazetteer, importantly, shows each feature on a map of Antarctica, while the *Encyclopedia*'s sole map is an outline on its front cover, with only the South Pole marked.

Running from Dome A to Zyodo-ike (a small pond on the coast of Queen Maud Land, named by the Japanese), the *Encyclopedia* also covers historic events, explorers, expeditions, planes, ships, scientists, stations and domesticated animals (cats, chickens, cows, dogs, horses, pigs and ponies—but not rabbits, despite Tom Crean's shipboard pet).

There are long entries on births, disease, deaths, women, blacks, distinguished visitors, exchange scientists, churches, fossils, meteorites, volcanoes, food, sanitation, tourism, nicknames of Antarctica, disasters, fires, art, photography, movies, stamps, post offices, territorial claims and whaling. There is one on Eskimos in Antarctica, and another on swimming, though it neglects to mention the first—and most impressive—swim in Antarctic waters, American Lynne Cox's two-kilometer swim (in 25 minutes) in the 0.5°C waters of Neko Harbor along the Peninsula in December 2002.

The *Encyclopedia*'s greatest strength are its several thousand biographical entries. The coverage is unorthodox, presumably to highlight the author's new research: major Antarctic figures are overshadowed by all-but-unknowns. Captain Scott is covered in 104 lines; Shackleton, 76; Byrd, 58. Ruth Kelly, a blonde stewardess who in 1957 became one of the first two women to visit a U.S. Antarctic station, gets 29 lines, one more than Amundsen. Many minor FIDs and BAS and Deep Freeze personnel also rate more lines than the first person to reach the South Pole, thanks to Stewart's prodigious research and personal interviews.

Major expeditions are outlined in considerable detail, each with a diary-like chronology noting events large and small.

This book rewards the patient reader, the organized browser. What make it so interesting are the author's opinionated voice and his idiosyncratic sense of relevance. Stewart often "thinks out loud," sharing the results of his solitary, meticulous research—as when he writes about two different places each named Punta Soffia by the Chileans during the 1950s: "Why there should be two features in the same general area, with exactly the same name, named by exactly the same people, at the same time, for the same man, remains a mystery."

Of Rozo, the mysterious Argentine cook on Charcot's first expedition, he writes: "Given that his name was probably not Rozo ('*ser de buen rozo*' means 'to have a good appetite'), pursuit of this gentleman resembles the chase for *ignes fatui*." Canada "has its own frozen wasteland, and thus has been slow to come to the Antarctican party." Captain Cook "was eaten by Hawaiians hungry for a good cook."

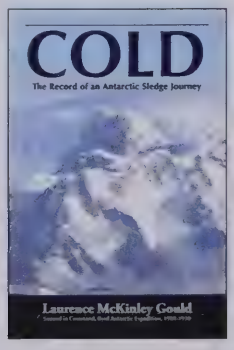
There's an incredible amount of minutiae here. Entries for many of the hundreds of exploration, naval, whaling and tourist vessels, for example, include crew lists complete with such notations as "tattoo on right arm," or "tattoo on left hand," or even "no left hand."

These trivial details can seem irrelevant, but often they're fascinating, as in the case of Philip Brocklehurst, youngest member of Shackleton's Nimrod expedition of 1907-09 (a wealthy man, he paid to join). Previously, Brocklehurst was best known for having some toes amputated during the expedition due to frostbite. But thanks

to Stewart, we also learn that Shackleton was the best man at his post-expedition wedding; 33 years later his wife divorced him for adultery; he imported wallabies to his estate, but they multiplied and escaped and ran wild over the Peak District; and in 1972, his much-younger second wife left him when he was 85.

Despite its hefty price, this *Encyclopedia* is valuable for the enormous amount of information—much of it to be found nowhere else—that it collects in easily accessible form. The bibliography of 543 sources, some unpublished, is well worth reading for its pithy annotations.

For more information, visit www.mcfarlandpub.com or call (800) 253-2187. ¶



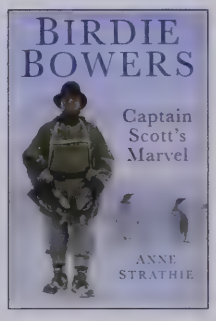
Cold: The Record of an Antarctic Sledge Journey

by Laurence McKinley Gould
Northfield, Carleton College, 2011,
iv + 243 pp., $16.95, soft cover,
ISBN 978-0-9746379-9-0

Reviewed by John Splettstoesser

If this book title and author sound familiar, it probably reminds you of one of the more well-known books that resulted from Gould's role as second in command on Admiral Byrd's first Antarctic expedition, 1929-30. In the centennial year of Amundsen's achievement of the South Pole in 1911, Carleton College has published a new edition of the book by Gould that first appeared in 1931. Limited editions were published in 1984 by Carleton College, and now this one in 2011. Larry Gould was a Professor of Geology at Carleton and served as its President from 1945 to 1962. The 2011 edition contains exactly the same content as the original in 1931, plus the Epilogue that appeared in the 1984 edition. The Epilogue includes his afterthoughts about the value of research that resulted from the International Geophysical Year, and steps taken to gain consensus for the Antarctic Treaty of 1959. Gould's account of the Byrd expedition has nothing to do with an overall report as such, but instead on the winter at Little America followed by the sledge trip to the Queen Maud Mountains and return to Little America in January 1930. Gould and his field mates were meticulous in planning for the sledge trip, both in food rations, placement of caches along the route, and also for the needs of the dogs. As a geologist, he was particularly interested in the role of the continent of Antarctica in relation to the other southern continents, at a time well before the concept of plate tectonics or Gondwanaland surfaced. Neither term is in the index, for example.

But, Gould's concluding remark in the 1931 edition foretells his curiosity, when he states that he wants to return to Antarctica to know more about its geological history, more about its past climates and the life that has thrived there. And his final words came to fruition later when he said "And I had rather go back to the Antarctic and find a fossil marsupial than three gold mines!" His discovery of coal, and reports from previous expeditions, told him that the climate of Antarctica must have been different in the past, to find coal deposits only 300 miles from the South Pole. Coal has been found in many areas of Antarctica since his time, climate changes have become evident in ice-core and other studies, and the magic key of a marsupial came to light with its discovery on Seymour Island, northeast of the tip of the Antarctic Peninsula in 1982, thus indicating the first evidence of a land animal having lived in Antarctica… as well as a former land connection with another southern landmass. Inquiries about the availability of this classic book may be addressed to bookstore@carleton.edu. Also, see it listed at www.carletonbookstore.org. ¶



Birdie Bowers: Captain Scott's Marvel

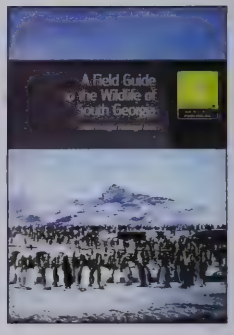
by Anne Strathie
The History Press, 2012. 224 pages. Maps, Photos, Appendices, Index.
ISBN: 978 0 7524 6003 1

Reviewed by Charles H. Lagerbom

Anne Strathie's new biography of Henry Bowers is out just in time for the centennial celebrations of the 1912 British attainment of the geographic south pole. In this new work, the author has successfully fleshed out a lot of boyhood information about his background and family life. It is one of the strong elements of the book. She also captures the essence of who Henry Bowers was and what he was about. According to most of his contemporaries, Henry Bowers seemed to be one of those people one wanted on one's side or team or expedition. When he died alongside Captain Scott and Edward Wilson in the infamous final tent just eleven miles from stores at One Ton Depot, he earned a spot in the literature of the Heroic Age of Antarctic exploration. But Henry's life was more than just about Antarctica. His life was one adventure after another, though brief and tragically-shortened. A seasoned sailor, daring Cape Horner, competent officer of the Royal Indian Marine, keen lepidopterist and naturalist, acute arachnophobe and first-class navigator, Henry Bowers constantly worked to make the best of his situation and surroundings. He jumped at the chance to use early diving equipment to walk along the seabed, shimmied to the top of a flag pole atop Ben Nevis, proved a resourceful and hardy sledger, a merry prankster, and general all-around helper (one of those go-to guys) all the while concerned with his faith, his family, his determination, his dedication and his spiritual role here on earth.

Once the author gets Bowers involved in the upcoming Terra Nova expedition, however, she decides to seemingly play it safe. She chooses not to delve too deeply into potentially uncomfortable waters with the context of Henry's part in the expedition. There is little mention of Scott's first impressions of the man, nothing about the drama upon the expedition's departure from Cardiff, which Henry alluded to in a later letter to Kathleen Scott. Any consideration of the reasons Scott may have had for setting One Ton Depot farther north than originally planned is avoided and only a bare mention of the "considerable deliberation" between Scott and Oates about the depot's location, even though Henry was right there. Scott's attitude towards Bowers about the pony incident is also downplayed and given bare mention. And the only description of the foolhardy march at Scott's insistence from Hut Point to Cape Evans after the depot laying disaster is a casual mention to the dangerous trip as just a "challenging clamber." No analysis of why five men went to the pole instead of just four, why the supply system that Henry had been an integral part of setting up, was replaced seemingly at the last minute, as well as no discussion why Bowers became that fifth man chosen for the polar party. When they turned northwards for the march home from the pole, it is just noted that Bowers stopped writing in his journal, with the suggestion he may have fallen out of the habit. This seems pretty unlikely since Henry was a prolific writer and recorder of his adventures for his sisters and mother and had been since he first left home. There is no in depth analysis or discussion of why, what it meant or anything else of a contextual nature. Perhaps it was thought that any such deliberations might reflect poorly on others of the expedition and so was purposely omitted. This is too bad.

What is enjoyable about the book is that the author grasps the sterling quality of who Henry Bowers was and his outlook and progression through life. She successfully captures his inner spiritual questions and faith, his quest for adventure and testing himself, his life-long commitment and dedication to his family and his indomitable spirit. And maybe in a biography of him that coincides with the one hundredth anniversary and remembrance of Scott and the entire Terra Nova Expedition, maybe that is enough. The story of Henry Bowers stands on its own. Anne Strathie's new biography of him does him justice in that spirit. It is a good read. It is a safe read. ¶



A Field Guide to the Wildlife of South Georgia

Edited by Robert Burton,
with John Croxall, Editorial Consultant
South Georgia Heritage Trust,
Dundee DD1 5BT, U.K., 2012,
200 pp., $24.95/ £17.95, soft cover
ISBN 978-0-9564546-1-4

Reviewed by John Splettstoesser

South Georgia is a banana-shaped island in the South Atlantic Ocean, about 170 km long by 40 km wide, situated 1390 km east-south-east of the Falkland Islands. A useful map for reference to geographic features mentioned in the book is printed on the inside front cover. The island is part of the Scotia Arc, and is there as a result of continental drift related to the opening of the Atlantic Ocean. The terrain of the island is rugged, about half of which is covered by glaciers. Mountain ranges form the backbone, with Mount Paget the highest peak at 2,934 m. South Georgia has a history of exploration and commercial exploitation of seals, beginning in the late 1700s, and also whaling starting in 1904 and ending in the 1980s. An introduction of these subjects along with the two commercial activities present—fishing and tourism—is summarized in the first 30 pages of the book. The potential introduction of alien species is guarded thoroughly because of the numerous human visitors to the island, and as a result of earlier introduction of unwanted species, an active eradication program of rats is currently underway. Headland (2012) lists 14 individual exotic terrestrial mammals in South Georgia, some associated with livestock and food resources for the whalers at whaling stations, all of which have become extinct except

for one—reindeer imported from Norway—and two accidentally introduced species—brown rat, and mouse. The ongoing eradication program for rats is sponsored by the South Georgia Heritage Trust, and also the U.S.-based non-profit "Friends of South Georgia Island" www.fosgi.org.

Eradication of reindeer and mice is also in future planning.

With that short background in mind, the reader is directed to the remainder of the book, the first comprehensive guide to the fauna and flora of South Georgia. Robert Burton is a natural history writer and lecturer on tour vessels to South Georgia and Antarctica, and studied albatrosses on Bird Island off the northwestern tip of South Georgia. John Croxall studied seabirds and seals on South Georgia for the British Antarctic Survey. Together, along with several specialists, they comprise an excellent team in documenting essentially more than 80 known bird, seal and cetacean recorded in South Georgia and surrounding waters, an overview of invertebrates, the 25 native plants and all introduced plants, and selected bryophytes and fungi. The inclusion of seabirds and marine life such as whales, seals, and dolphins, implies a food web that should include what they feed on; for example, fish, krill and squid, but the guide would soon become cumbersome in this regard, whereas those organisms are treated in detail in other publications. Suffice it to say that this field guide is aptly named in listing all known organisms that might be seen on land or near land.

Birds constitute a major part of the text, divided into penguins (breeding and vagrant), tubenoses, other categories such as shag, herons, egrets, ducks, birds of prey, sheathbill, skuas, gulls, terns, waders, and the pipit, the only passerine breeding on South Georgia.

Seals number six species, and cetaceans 14. There are six invertebrates listed and described, and plants are divided into forbs, grasses, a sedge, rushes, ferns and clubmoss. Lower plants include mosses, liverworts, algae, lichens, and fungi. It is no surprise that *Taraxacum officinale*, the common dandelion, is on the list, a worldwide traveler.

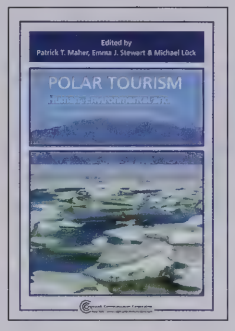
A section on Taxonomic Notes includes a discussion of changes occasionally incurred on organisms based on relationships between species. A glossary of 19 terms helps to explain words that might not be familiar to the reader. Acknowledgements include the names of individuals who assisted in writing text or submitting advice.

Photographic credits include the names of photographers for particular photographs. Every animal species shown in the Field Guide includes a color photograph, along with its common and scientific names, distribution, identification, voice, and behaviour. Plant species also includes common and scientific names, description and distribution. A five-page index of English and scientific names completes the book, making it easier for the reader to locate specific wildlife entries.

For readers seeking further information about South Georgia, the many possibilities include Headland (1984, 2012), Galbraith (2011), and Poncet and Crosbie (2005), for only a few examples.

The book is a work in progress, and changes can occur if unintentional organisms are introduced in the future, eradication procedures are successful, especially for rats, new plant species arrive via visitors clothing, and it is possible that existing species have not yet been discovered. Visitors are advised to inform the local authorities or the South Georgia Heritage Trust if any new plant species are noted, for example. Disease breakouts among animals, especially penguins with avian cholera, have been noted in recent years, creating the unpleasant possibility of spreading to other colonies on the island. A rigorous program of biosecurity (p. 22) awaits all human visitors to South Georgia as a means of preventing introduction of aliens, so if you visit there, expect to have clothing and backpacks inspected, pockets turned inside-out, boots scrubbed, and Velcro straps inspected for the possibility of seeds and other plant material that has traveled with you. The number of tour vessels that visited South Georgia in the 2011-2012 austral summer was 51, with some 5,860 visitors.

This book is available from several sources: Dundee/South Georgia Heritage Trust website www.sght.org; Longitude-Books; Princeton University Press http://press.princeton.edu/titles/9847.html; and also at the Museum at Grytviken, South Georgia. The book measures 14.5 x 21 cm and is of sturdy paper for reference in the field and backpack transport. Whether you visit South Georgia or not, or have in the past, you will want this useful reference book in your library. ¶



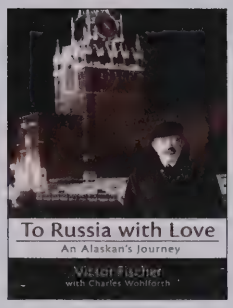
Polar Tourism: Human, Environmental and Governance Dimensions

Edited by Patrick T. Maher, Emma J. Stewart, and Michael Lück (Cognizant Communication Corporation, 2011, 306 pp, $110)

Reviewed by John Splettstoesser

The subject of polar tourism seems to have no ending for specialists who study it in various aspects, this book being part of the publisher's Tourism Dynamic Series of books. The team of Maher, Stewart and Lück has come out with another very useful collection of chapters that assess, in this case, the human, environmental, and governance dimensions of tourism. In the Arctic, that means resident attitudes toward tourism in Cambridge Bay and Pont Inlet, Canada; environmental aspects of beluga whale-watching vessels in Churchill, Manitoba; and tourism strategies and environmental labeling in Greenland. The same "dimensions" for Antarctic tourism include the aspect of "Antarctic ambassadors," with perspectives from the Ross Sea region; effects of human activity on Weddell seals; and a long-term strategy for tourism and decision-making within the Antarctic Treaty System.

Additional sections of the book include chapters on sub-Arctic tourism and sub-Antarctic tourism, with somewhat the same themes, in northern Ontario and northern Europe, and Australia's Macquarie Island and New Zealand's islands (Snares, Bounty, Auckland, Campbell, and Antipodes), respectively. All the southern islands are heavily visited, with tourism managed by strict procedures in place by their parent countries. The 16 chapters by specialists in their fields and with field experience in tourism, cover a cross-section of another aspect of tourism that continues to evolve as investigators provide a comprehensive assessment of the subject, and offer suggestions as to its improvement. As Enzenbacher points out in the chapter on Conclusions, polar tourism is not static, but continues to evolve in response to consumer demand and requires specific management techniques, rules, and regulations. The cooperation between tour operators and regulators is key to making the industry work properly without negative impacts. I recommend the book to a growing audience of those who have experienced tourism in polar regions, now numbering in hundreds of thousands, and those who want to find out more about it to be assured that it is conducted properly. For a companion book on the subject, by the same three editors, see a review in January 2011 of *The Polar Times*, p. 26, "*Cruise Tourism in Polar Regions: Promoting Environmental and Social Sustainability?*" ¶



To Russia With Love: An Alaskan's Journey

By Victor Fischer, with Charles Wohlforth. Fairbanks AK, University of Alaska Press, 2012. vi + 405 pp. Illustrated, Chapter Notes, Index. Clothbound US$27.95.

Reviewed by Dave Norton

This author's life story is more significant and riveting than its modest title suggests. Vic Fischer spent his formative years to the age of 15 mainly in the USSR. Before his mother, Markoosha, his older brother George, and he were permitted to flee Stalin's escalating purges in 1939, "Vitya" as a schoolboy had developed a fascination with polar affairs and the Far North.

After reunion in the U.S with their American father, journalist Louis Fischer, the boys undertook higher education (University of Wisconsin) and adjustment to a democratic free enterprise system. During WW II, Vic and George both served in the U.S. Army, while their two closest friends from Moscow school days, Lothar Wloch and Koni Wolf, served in opposing combatant forces, Lothar as an officer in the Luftwaffe, and Koni as a conscript in the Red Army.

Vic earned a postwar graduate degree in planning from MIT, accepted a federal agency job offer that took him and his wife Gloria to Alaska in 1950, and rose to leadership in the Territory's non-partisan campaign to become the US's 49th full-fledged state (1959). The young lawmaker, planner, and policy developer, with a wide circle of diverse friends, was enthused by the optimism radiating from the Kennedy administration in Washington DC. He and Gloria agreed hesitantly to leave Alaska in 1961 for a year-long graduate fellowship at Harvard's Kennedy School of Government. Several irresistible federal appointments in the nation's capital then stretched their stay on the east coast beyond three years. When North America's largest-ever-recorded earthquake struck Alaska on 27th March 1964, Vic was whisked aboard Air Force One to inspect destruction in Alaska. Vic and Gloria's permanent return to Alaska the following year enabled Vic to found a social sciences research institute at the University of Alaska.

That University position absorbed Vic's professional energies for 15 years (1965-80) during which he reconnected with both former schoolmates, Lothar, a prominent architect in West Germany, and Koni, a successful filmmaker in East Germany. Alaska's maturation as a petroleum-producing state was largely complete by 1980, allowing Vic to seek and win electoral office representing Anchorage as a State Senator in Juneau (1981-86). In retrospect, Vic is glad not to have been reelected to another term in the Senate. Forerunners of zealous political partisanship had just begun strangling effective democracy there by the mid-1980s.

About 1988 Vic Fischer might have chosen to retire from public life. Instead he embraced a combination of unprecedented challenges. The tottering Soviet Union was loosening state controls over many things. Vic could not resist involvement. At the Beringian end of the USSR, direct friendship flights between Magadan and Anchorage began that year and continued in both

directions the following year. A local air carrier added short direct flights between Nome, Alaska and Providenyia, Chukotka. As host, guest or both, Vic found himself traveling an average of eight times a year to both Beringian and European ends of Russia into the first decade of the 21st century. After their Gorbachev and Yeltsin years, Russians' briefly liberalized practices were curtailed. His cosmopolitan background allows Vic to understand why liberalization experiments bewildered lifelong Russian friends, sometimes for being hastily tried and hastily abandoned. Charitable toward almost every acquaintance and colleague in his far-reaching tale, Vic still rejoices in the net gains he attributes to Russians during his mobile diplomacy. An optimist, too, Vic expects friendships and civility to trump political brutalities, even the worst he has confronted since the 1930s.

For many arctophiles, and certainly for those interested in lesser-known circumpolar affairs, this book is a "must-read" and a thoughtful gift. ¶

The Ice Balloon

by Alec Wilkinson
Knopf, 256 pages

Reviewed by Cliff Bekkedahl

Many attempts were made to reach the North Pole circa 19th-20th century and none more dicey than aloft in a hydrogen-filled balloon. Solomon August Andree, a Swedish engineer, gave it a shot, and he and two companions paid with their lives. No, not in some kind of Hindenburg catastrophe but, rather, the customary disaster of trying to sled and walk their way back to civilization from high northern latitudes. As many detractors predicted, their drifting balloon carried them into harm's way and then simply ran out of gas. The airborne journey fell short of the Pole, and hundreds of miles from any promising location offering the possibility of rescue.

Ballooning was a popular and adventurous activity at the turn of the 20th century, especially in France where balloon fabrication was a niche industry. The author describes dozens of French women sewing gigantic panels and others carefully oiling, waxing and sealing the panel seams. Andree and his mates gathered supplies, including sleds for a return journey, and went to great lengths to balance the weight of their anticipated needs for survival over a long period of time against the lift capability of their balloon in the frigid Arctic air.

Two attempts to launch were made. The first was aborted due to unfavorable winds and weather, which set the adventure back one full year. Andree used this time to raise additional funds for another launch and fine tune their logistics requirements.

The second attempt was nearly canceled, again because heavy winds threatened the delicate lift-off maneuvers of a heavily laden craft.

Once airborne, the winds, while northerly, took them off their desired track even as they sailed several hundred of miles in brisk winds. Hydrogen leakage and the heavy load soon had them bouncing on Arctic ice fields and eventually a gentle but forced landing brought the ballooning phase of this venture to an end.

All three airman kept detailed journals which were eventually recovered, so their account of the journey south to the nearest point where a rescue could be expected provides the basis for the remainder of this book. It is another of the many tragic stories that dominate the history of polar exploration. Andree and his mates all perished, and their remains were finally discovered some 33 years later.

The ballooning adventure takes up about one half of this book. The author also takes readers on a tour of several other high profile and disastrous Arctic expeditions and forced wintering-over situations.

The *Ice Balloon* provides readers a glimpse of Swedish society on the eve of the 20th century. King Gustav himself took an interest in Andree's project and provided modest funding. Other prominent Swedes such as Nansen and Nobel are part of the typical controversy that often surrounded the financing and planning of "first to reach" polar expeditions.

Ice Balloon deserves a read by APS members. Author Wilkinson offers an excellent account of a daring project and honors the men who tried too soon but did their best. ¶

The Fate of Greenland: Lessons From Abrupt Climate Change

by Philip Conkling, Richard Alley, Wallace Broecker and George Denton
MIT Press, 2011, 216 pp, $29.95

Reviewed by John Splettstoesser

The book's title is a timely subject for two reasons—climate change is constantly in today's news, and Greenland has been experiencing unusually rapid melting of its coastal glaciers. Alley, Broecker and Denton are well known for their research and publications on Earth's glacial history, and Conkling for his experience on various expeditions to remote parts of the northern oceans while accompanying Gary Comer aboard the 152-foot vessel *Turmoil*. Gary Comer founded the Lands' End direct mail clothing empire, and after he sold it, was free of business responsibilities and was able to support studies related to climate change. He also took many of the photographs in this book as examples of Greenland glaciers and glaciation. After completing a transit through the Northwest Passage in 2001, Comer realized the importance of the depletion of sea ice in making a transit in record time as it relates to climate changes in northern regions. The book is a product of a joint effort by three world-famous scientists, a naturalist (Conkling) who founded and is President of the Island Institute in Maine, plus Gary Comer, who had the resources to carry out an interdisciplinary study of abrupt climate changes that occurred in the past, and also voiced concern for unpredictable effects that future climate change might have to life on Earth. During the Arctic summers of 2002, 2003, 2005, and 2006 Comer, Broecker, Denton, Alley, and Conkling and selected students organized a series of research expeditions to the Arctic, particularly to Greenland, while Comer battled cancer, which ultimately claimed him in 2006. [From *Preface*, by Philip Conkling, p. ix-xiv.]

Numerous color photos supplement the text and help to explain various features of glaciation and products of an earlier extent of the Greenland Ice Sheet. Geologic evidence suggests that Greenland has already been affected by two dramatic changes to climate: the Medieval Warm Period, which allowed exploration and establishment of settlements in Greenland; and the Little Ice Age that followed and caused the abandonment of those settlements. Discussions of glacial periods in other parts of the world are included to illustrate examples of the subtitle of the book—abrupt climate change—and theories as to the causes. A five-page bibliography supplements the text, and a six-page index of terms helps to locate subjects in the text. I recommend the book for a broad audience, both technical and general public, to learn more about the aspects of short-term climate change, with many examples from Greenland. ¶

Science in the Snow: Fifty Years of International Collaboration Through SCAR

by David Walton and Peter Clarkson Cambridge, U.K., SCAR, 2011, 258 pp, paperback. $39

Reviewed by Robert Rutford

This somewhat quizzical main title could mean most anything related to polar areas, but the subtitle is revealing: *Fifty Years of International Collaboration through the Scientific Committee on Antarctic Research*, authored by David W.H. Walton and Peter D. Clarkson, two of the individuals who were a part of SCAR for many years.

SCAR was established by the International Council for Science (ICSU, formerly International Council of Scientific Unions) in 1958 during the closing stages of the IGY. The purpose of SCAR was to coordinate the scientific results of the IGY, but it quickly became apparent that research was to continue. During the past 50 years the original membership of 12 national scientific academies has grown to 31 Full Members, 4 Associate Members and 9 ICSU Union members. The mission of SCAR has been expanded to include the role as the scientific advisor to the Antarctic Treaty Consultative Meetings.

This history of SCAR is a broad overview of the principal objectives of SCAR as well as a guide to major scientific initiatives and developments during those 50 years. The 258 pages and 11 appendices help to provide a reference to SCAR meetings, elected officials, principal publications and activities. There are a few minor errors and omissions that do not distract from the presentation. The authors have done an outstanding job of melding together the evolution of SCAR from the proverbial "old boys club" of the early years to the present international science organization that is recognized as the leading science group for the Antarctic and Antarctic activities.

As a former president of SCAR and one who was active within the organization for 34 years my single criticism of the volume is it fails to document the internal issues and problems that at times made it appear that SCAR was going to self-destruct. Organizational change during the years was not easily achieved, personnel issues at times had a negative impact on the functions of SCAR, internal politics at times were difficult to deal with, and problems of funding sources and amounts were and are an important part of the history and maturation of the organization. It is recognized that to include a discussion, much less a mention of some of these matters might well cause some individuals some concern, I wish that somehow woven into the history of the organization there be some mention of these internal issues and their resolution. The separation of what is now COMNAP from SCAR for example is handled with little discussion of the emotion that was a part of the process.

I am sure that each of the SCAR delegates and members of delegations who have read this volume could point out specific matters that they feel should or could have received more attention from the authors. Minor criticism should in no way detract from the excellence of this history of SCAR. The time and effort that Peter and David put into the research and writing of this volume were above and beyond the call of duty. I note that there is no clear statement about where the "additional material" from Colin Summerhayes is to be found in the book. I am assuming that he was the primary author of the final chapter entitled "The Achievements of SCAR".

This volume should be a on the bookshelf of every scientist working in Antarctica. The volume should not only be on the bookshelf but should be required reading. Too often the role that SCAR has played in Antarctic Science is not appreciated or understood by the scientists who have not been aware or involved in SCAR group activities.

We owe the authors a hearty word of thanks for writing this volume.

See http://www.scar.org/publications/list/ for information to order online. ¶

PHOTO PROVIDED BY MARIE FEGLEY

Shown here is "Camp Cold Bottom," a hut near Little America V, and the six men who lived in it, circa 1955. Left to right are Amory "Bud" Waite (long-time expedition member with Adm. Richard Byrd), Bill Mellon (author of poem at right), Richard Handy, Albert Fegley (see obituary below), Arthur Christopher, and Paul Jorgensen.

A Bit of Whimsy From Camp Cold Bottom

Ode to the Crystal Commode

by Bill Mellon

Tho the seat may look flimsy,
It wasn't built for sheer whimsy;
Sit down and relax,
Your nerves don't overtax;
Don't take us for fools.
At minus-15,
Yours is the firmest of stools.

OBITUARIES

Albert Place Fegley

Albert Fegley was born in Mont Clare, Pennsylvania, Sept. 18, 1929, and passed away in Duluth, Minnesota, October 30, 2012. He received a Bachelors Degree in Electrical Engineering from Pennsylvania State University, 1951, and a Masters Degree in Electrical Engineering from the University of Pennsylvania, 1958. His background and education served him well, and apparently paved the way for an assignment in Antarctica. After induction into the U.S. Army, during the Korean conflict, was attached to the Research and Development Company, Signal Corps Engineering Laboratories, Fort Monmouth, New Jersey. In August 1955 a request was made for volunteers to participate in Operation Deepfreeze. Albert Fegley was one of five selected out of about 25 volunteers. With Amory H. Waite as director and project engineer of the Signal Corps phase, men from Fegley's Laboratory were to conduct a series of tests relative to the attenuation of radio waves through ice and snow during the period 1955-1956 at three U.S. bases in Antarctica in preparation for the IGY of 1957-58.

He left Boston on the icebreaker *Eastwind* on November 10, 1955. His group was situated on the ice near Little America V and conducted studies in radio operation, radar tests, and snow crystal studies.

Fegley was also responsible for operation and maintenance of tracked vehicles known as Weasels, and tests of cold-weather clothing, tents and sleeping bags. He met Admiral Byrd and Dr. Paul Siple at a meeting in Washington, D.C., September 22, 1955, and had the opportunity to provide services as an impromptu "chauffeur" to Admiral Byrd at Little America V for a flag-raising ceremony on January 4, 1956.

Byrd was on his way to the ceremony in a Sno-Cat that broke down. Fegley was traveling directly behind in a Weasel and offered a ride for the remaining distance. He returned to the U.S. on the Arneb, arriving May 5, 1956. Later in his professional career, he was awarded three patents for power systems pertaining to large computers. ¶

Joseph P. Farman

Joseph P. Farman, one of the greats of polar science, passed away on May 11, 2013 in Cambridge, England, at 82 years of age. He was the son of a builder, born in Norwich and educated at Corpus Christi College, in Cambridge. He spent nearly all of his professional career at the British Antarctic Survey, and repeatedly travelled to Halley Station. He is survived by his wife, Paula.

Farman was the senior author of the landmark paper announcing the discovery of the Antarctic ozone hole, published in the prestigious journal *Nature* in 1986 with two colleagues, Brian Gardiner and Jonathan Shanklin. The paper would go on to become the most highly cited work in Antarctic science, according to a recent analysis.1 Farman was the consummate experimentalist, dedicated to his measurements and always meticulous in his approach to ensuring accuracy. This stood him in good stead when, in the early 1980s, he and his team at the British Antarctic Survey began to notice that the total ozone content above Halley Station seemed to be decreasing in a new and unusual way in the spring season. Ozone depletion had been predicted – but for the far future, and by a few percent in 2100 – not 30 or 40% loss by the 1980s, and not especially in Antarctica.

Farman and his colleagues checked the Halley measurements, checked them again, and installed a new instrument to be triply sure of his results. After completing their checks, they decided that if the October monthly mean total ozone went outside of the two-sigma inter-annual variability observed at Halley since the measurements began in the late 1950s, they would publish the data. That happened in 1984, and in 1985 the paper appeared, shocking the scientific community. The British Antarctic Survey was a small and little known group in this area of study in the early 1980s, and it seemed astonishing that they would have detected something so important before others. After a brief period of scientific debate in which everyone from NASA to New Zealand looked at every scrap of data they all had, it became clear that Farman and his colleagues were right about this remarkable data, and that others had missed something ground-breaking.

Farman's paper speculated—but did not prove—that the cause of the abrupt ozone decline was human-made chlorofluorocarbons (CFCs). The rest is perhaps the greatest environmental science and policy story of the 20th century. Within a few years, other researchers (including this writer) had measured enough of the chemistry in Antarctica and in the laboratory that it was clear that CFCs were indeed the primary cause of the remarkable and unexpected hole in the ozone layer at the bottom of the world.

Farman's work was a key underpinning in the developments that led to the international Montreal Protocol of 1987 to protect the ozone layer, under which all the nations of the world have now phased out the production of the chlorofluorocarbons, and the ozone hole will eventually close.

Farman was sharp and thoughtful, stubborn and independent. He was a man who told others what he thought without much window dressing, and he was usually right. His contributions to science will continue to serve as an inspiration to other scientists and as a touchstone in global environmental change and policy. ¶

by Susan Solomon

[1]Dastidar, P. B., and S. Ramachandran, Intellectual structure of Antarctic science: A 25-years analysis, *Scientometrics,* Vol. 77, No. 3, 389–414, 2008.

F. Sherwood Rowland

F. Sherwood Rowland died at the age of 84 on 20 March 2012 at his home in California. He was born on 28 June 1927 in Delaware, Ohio, and gained recognition for his work with post-doctoral student Mario Molina while at the University of California-Irvine for the proposal that chlorofluorocarbons (CFCs) as aerosol propellants and refrigerants were destructive to the ozone layer in the stratosphere, ultimately creating a hole in the layer. Because ozone blocks harmful ultraviolet rays, the prospect existed of continuing destruction of ozone, causing serious harmful effects on humans and other organisms. The discovery led to the 1987 Montreal Protocol and a stop to the production of CFCs. Although many of his colleagues were originally skeptical of the finding, which was published in *Nature* in 1974, the discovery was shown to be factual when Joseph Farman and colleagues of the British Antarctic Survey discovered a continuing and gradual decrease in ozone over Antarctica, publishing the results in *Nature* in 1985. Rowland and Molina's work on the subject earned them and Paul Crutzen the 1995 Nobel Prize in Chemistry. ¶ ***New York Times, 12 March 2012.***

Geoffrey Hattersley-Smith

Geoffrey Hattersley-Smith died on 21 July 2012 at the age of 89 at his family home in Sissinghurst, England. He was born to a military family on 22 April 1923 shortly before his father was posted to Hong Kong. The family returned to England in 1926 and lived in London before moving to Sissinghurst in 1928. In 1931 he was sent to a preparatory boarding school before gaining a scholarship to Winchester College in 1937.

In 1941 he was admitted to New College, Oxford, to read forestry. As World War II was in full swing, he was obliged to join the Senior Training Corps to prepare for Army service. However, in 1942 he was able to transfer to the University Naval Division. Geoffrey was called to the colors in January 1943 to serve as an Ordinary Seaman, then drafted to HMS Rockingham as a cadet. The ship escorted Atlantic convoys before joining an eastbound convoy.

At this point Geoffrey was posted to HMS King Alfred, a south coast shore base, for officer training. Graduating three months later as Midshipman RNVR, he was sent to Royal Naval College in Greenwich for training in navigation, and from there to Devonport for gunnery training. After a month's leave he was posted to HMS Scorpion, a destroyer escorting allied convoys to Murmansk.

Geoffrey's baptism of fire was when Scorpion took part in the invasion of France on 6 June 1944. After two weeks of action the ship was ordered to Scapa Flow. From there they were involved in an attack on the German battleship Tirpitz in Alten Fjord, Norway, before leaving to escort a southbound convoy from Murmansk.

In September 1944 Scorpion escorted another Murmansk convoy, routing north of Bjørnøya to avoid detection by German aircraft. In October the ship escorted aircraft-carrier assaults on Tirpitz in Norway. In December she was one of four ships that severely damaged the German battle-cruiser Scharnhorst north of Nordkapp, Norway.

In February 1945 Geoffrey was appointed to HMS Emperor, a small aircraft carrier headed for Ceylon. In Trincomalee the ship embarked a Fleet Air Arm Squadron of Hellcat fighters to attack Japanese targets in Malaya and Sumatra. Later they sailed for the Burma coast before steaming to Singapore for the formal surrender of the Japanese forces.

Geoffrey was able to return to his forestry studies at New College, Oxford, in January 1946. However, he soon switched to a course in geology. In term time his (illegal) recreation was roof-climbing. At the same time he was an active member of the O.U. Mountaineering Club and the O.U. Exploration Club.

Summer vacations from Oxford were spent climbing in the Alps. He assisted Max Perutz in a classic experiment that involved drilling to the bed of a glacier. Decades later Max earned a Nobel prize for elucidating the molecular structure of Haemoglobin.

In the summer of 1948 Geoffrey assisted Gerald Seligman, founder of the British (later International) Glaciological Society and Editor of their Journal of Glaciology, who lived close to the family home in Kent. Gerald was engaged in studying ice crystals and their metamorphosis on the lower Grindelwald Glacier.

On graduating from Oxford, Geoffrey joined the Falkland Island Dependencies Survey (later renamed the British Antarctic Survey) to spend a year on King George Island in the South Shetland Islands as Base Leader and Glaciologist. The party had two dog teams, so learning to drive them was an added bonus. At the end of a rewarding winter, Geoffrey broke his ankle while skiing. The voyage north included a tour of the Falkland Islands. From there the wintering group took passage home in HMS Andes.

After a visit to the Alps in 1951, the Director of the Scott Polar Research Institute arranged for Geoffrey to visit Ottawa in Canada. Through a contact there he was offered a post as Defence Staff Officer in the Arctic Section of the Defence Research Board.

This proved to be a life-changing experience. It was the start of a 21-year career of varied research, most of it in the northernmost areas of the Canadian Arctic islands. The first summer (1951) was spent in the small research ship Cancolim II cruising in the Beaufort Sea.

From 1953 for a number of years, summer operations were centered on the Ward Hunt Ice Shelf off the north coast of Ellesmere Island. Geoffrey's party included a Canadian geologist and also Dr Albert P. Crary, a geophysicist from the USAF Cambridge Research Center. Collaborating with American scientists was as astute move that gave access to USAF flights to and from Thule Air Base in north-west Greenland. The Royal Canadian Air Force was also at hand to deploy Defence Research Board parties to any of their Arctic outposts.

In 1955 Geoffrey married Maria Kefallinou, a young cytologist from Greece who was at the time working towards an M.Phil. in Oxford. The couple chose to reside in Ottawa and in due course daughters Kara and Fiona came into the family.

The coming of the International Geophysical Year of 1957-58 led to Operation Hazen in northern Ellesmere Island, based on a small wintering station beside Lake Hazen. The station was supplied both by Canadian and US aircraft. When the lake was frozen, Gilman Glacier on its north shore gave access to the interior of northen Ellesmere Island.

Geoffrey was an avid follower of the history of earlier exploration of Ellesmere Island before his group made major discoveries of their own. A new map of northern Ellesmere Island gradually took shape, and knowledge of the history, meteorology, geology, oceanography, ice conditions, and flora and fauna added to the limited information from earlier travelers in the region. North of Latitude Eighty,published by the Defence Research Board in 1974, was Geoffrey's very readable account of the series of expeditions that he led. It includes a 10-page "selected bibliography" that covers the very wide range of his own and his group's publications.

On retiring from the Defence Research Board in 1973, Geoffrey returned to his homeland with Maria and their daughters. Rather than sinking into an armchair in the family home, he was again employed by the British Antarctic Survey and appointed Secretary of the UK Antarctic Place Names Committee. This was a humble enough title for a monumental task that entailed sorting out the complex and multi-national history of place-naming in British Antarctic Territory (the sector between longitudes 40° and 80° west). Confusion had been caused by the use of overlapping or ill-defined names for the same geographical feature.

Having been admired in Canada as a meticulous organizer and rugged polar traveler, he now proved himself also to be a scholar of the highest order. Reconciling poorly-defined names shown on a host of sketch maps and sometimes on no map at all, he sought to arbitrate between conflicting names while seeking, wherever possible, to acknowledge the earliest name given to a particular feature—in any language.

Retiring after 16 years, a permanent record of his painstaking scholarship was published in two quarto volumes each measuring 244 x 305 mm under the title "The History of Place Names in the British Antarctic Territory" (British Antarctic Survey Scientific Reports, No.113, 1991). The total weigh of the two volumes added up to a massive 3.2 kg. Interestingly enough, Part 1 breaks the definition of Lewis Sound mid-sentence at the end of page 350 and continues it on page 351 in the second volume.

Apart from the probability that certain Antarctic Treaty powers may prefer to use their own place names (or translations of the British names), they will surely acknowedge the academic rigor and meticulous objectivity of Hattersley-Smith's historical research. ¶ **Charles Swithinbank**

Robert A. Wharton

Robert Wharton, President of the South Dakota School of Mines & Technology, died September 19, 2012, at the age of 60. Wharton received his Ph.D. in Botany from Virginia Polytechnic Institute, and served as a member of the Federal Government's Senior Executive Service as the Executive Officer for the National Science Foundation's Office of Polar Programs. In addition, he had been a Visiting Senior Scientist at NASA Headquarters in Washington, D.C., an executive Vice President for the Institute of Management Studies

in Reno, Nevada, and a Vice President for Research and Research Professor at the Desert Research Institute in Reno. Prior to joining the School of Mines, Wharton served as Provost and Vice President for Academic Affairs at Idaho State University.

Wharton participated in 11 expeditions to the Antarctic, and served on the National Research Council's Polar Research Board. He was a Principal Investigator in the first LTER (Long Term Ecological Research) Project in the McMurdo Dry Valleys. His pioneering research from 1978 was on microbial mats in Lake Hoare. Wharton Creek (77°38'S, 162°44'E) is named for him, a meltwater stream flowing along the south edge of Suess Glacier to the SW corner of Lake Chad in Taylor Valley, in commemoration of his long-time research in this area that he knew so well. ¶ **From *Rapid City (South Dakota) Journal*, 20 September 20, 2012, and John**

Richard Barwick

Richard (Dick) Barwick's Antarctic legacy is a factor of being in the right place at the right time. He was a member of Sir Edmund Hillary's Transantarctic Expedition support team in the summer of 1956-57, and returned to Antarctica the following summer (1957-58) as part of a New Zealand team to work in Victoria Valley. Barwick returned to Antarctica in the 1958-59 summer to join Barrie McKelvey, Peter Webb and Colin Bull in a Victoria University of Wellington Expedition in the Dry Valleys, an expedition made famous by Bull's book "Innocents in the Dry Valleys." Barwick was the zoologist on that expedition. Barwick Valley is named for him. He was born 1 September 1929 and passed away on 10 November 2012 at the age of 83. ¶

John Joseph Mulligan

John Mulligan died at his home in Juneau, Alaska, on February 14, 2012, two weeks before his 95th birthday. He was born in Woodbury, New York on February 28, 1917. He started a life-long career in mining, working as a mucker and driller in the northeastern U.S. and southern states, Alaska and California. He enlisted in the Army Engineers in 1942, and was placed in charge of a weather station near Egedesminde (now Aasiaat), Greenland, until the war ended in 1945. While in Greenland he learned the Eskimo language and skills of traditional Eskimo hunting. After the war, John attended the Missouri School of Mines in 1946 and graduated in 1949 with a degree in Mining Engineering. He was hired by the U.S. Bureau of Mines in 1949 and worked there until he retired in 1985. For most of his career with the Bureau he discovered and mapped mineral resources throughout Alaska. In 1959 and 1960 he worked in Antarctica on coal deposits, publishing U.S. Bureau of Mines reports on the areas he mapped – Report of Investigations 6218 and 6331 on Mount Gran and Willett Range coal deposits, respectively. In 1970 he became chief of Field Operations for the Bureau in Alaska and focused on gathering mineral data to support the land decisions mandated by the Native Land Claims Act. Mulligan Peak (77°11'S, 160°15'E) in the Willett Range is named for him. *Juneau Empire*, March 2012. ¶

Jay Childs Klinck

Jay Klinck was born 26 April 1943 and died on 27 December 2011, in Wolfeboro, New Hampshire, at the age of 68. He volunteered for two tours in the Peace Corps, serving in India and Micronesia, from 1963 to 1968. In 1969 he joined the U.S. Navy, serving in the Seabees in Antarctica. Upon completion of his Navy service, he continued work in the polar regions, both in Antarctica and in Greenland and Alaska under National Science Foundation projects, including wintering in 1973 as part of a four-man crew at Siple Station, Antarctica.

After more than 25 years of extensive field work in the polar regions, he obtained a Master's degree in Polar Studies from the University of Cambridge, England. Following that, he served as Expedition Leader on the tour ship *Hanseatic* in polar waters and the Amazon River. I shared a cabin with Jay when we were both lecturers on a tour ship in the Canadian Arctic. Jay's last expedition was to kayak the entire 2,000-mile length of the Yukon River, from its origin in Canada to its mouth in the Bering Sea, collecting water and riverbed samples along the way for the U.S. Geological Survey. Klinck Nunatak (72°04'S, 63°59'W), in south-central Palmer Land, is named for him. ¶ **John Splettstoesser, and *Boston Globe*, 30 December 2011. ¶**

James Lloyd "Doc" Abbot Jr

MOBILE, Alabama—Retired U.S. Navy Rear Adm. James Lloyd "Doc" Abbot Jr. never let his age get in the way of having fun.

The Mobile native was still flying his own airplane in his 90s, even after the Federal Aviation Administration told Abbot he couldn't fly alone, according to friend Dave Reaney.

So he found someone to accompany him on flights, said Reaney.

"They would go to the airport and the man would just sit there and Doc would fly his plane," Reaney recalled.

His flying days ended Aug. 10 when the 94-year-old Abbot died in Alexandria, Va.

A memorial service will be held at 11 a.m. Wednesday, Aug. 22 at All Saints Episcopal Church at Government and Ann streets followed by a reception in the parish hall. Burial will be in the Naval Academy Cemetery in Annapolis.

Abbot is survived by two sons, retired U.S. Navy Captain J. Lloyd Abbot III of Placida, Fla., and retired U.S. Navy Admiral Steve Abbot of Arlington, Va., both Navy aviators; their spouses, and five grandchildren, two of whom are Navy aviators.

"He was the most positive person I ever met in my life," said Abott's son, Steve. "He woke up with a smile on his face every morning."

Tom McGehee, Abbot's godson, recalled how the elder Abbot got his nickname.

When Abbot was 13 he would drive McGehee's grandfather, who was a doctor, on house calls around Mobile, according to McGehee.

Abbot loved driving fast, he said. "Grandfather had one of those spotlights on the car so he could literally run red lights with the spotlight on," said McGehee.

Abbot would also go into the operating room with McGehee and watch him perform surgery.

His limited medical experience helped land Abbot the job as manager of Navy's football team when he was a student at the U.S. Naval Academy, said McGehee.

Ray Isbell related the story of how Abbot's family home caught on fire and was destroyed Dec. 4, 1918. Isbell said Abbot told him that everyone got out of the house safely after being awakened by a crying baby. Abbot, according to Isbell, said he was the crying baby.

While reading newspaper articles about the fire, Isbell said Abbot told him: "And you can be sure I never let anybody forget that I saved their lives, either. I would sometimes have to remind them."

Last year Abbot was honored by the Mobile Bay Area Veterans Day Commission as Patriot of the Year. Abbot was one of the retired military officers who created the commission.

Abbot was the commanding officer of the attack aircraft carrier USS Intrepid, which dispatched a jet helicopter to pick up Astronaut Scott Carpenter after his rescue from the sea. Carpenter's flight is remembered most for its re-entry when his space capsule overshot its target by 250 miles.

A graduate of Murphy High School, Abbot was elected the first member of the school's Hall of Fame.

A distinguished veteran, he commanded the U.S. Naval Support Force Antarctica and Carrier Division 16, served as director of Naval Warfare Analyses and served as inspector general of the U.S. Atlantic Fleet. He retired in 1974 as director of naval educational development.

He was a member of the local Navy League and served on the Mobile Area Chamber of Commerce's Military Affairs Committee.

Abbot was a graduate of the Naval Academy's Class of 1939, where he served as class president.

In 2006 Abbot was an honored guest in New York where officials invited him to ride the museum aircraft carrier USS Intrepid from its berth on Manhattan's west side to a shipyard in nearby New Jersey for restoration. Abbot commanded the Intrepid from March 1961 until June of 1962.

In a story about participating in the carrier's relocation, Abbot told a reporter "Where else can an 88-year-old find something like this to do? I have to pinch myself to believe it's true." He called the occasion "a great honor."

His decorations include two Legion of Merit awards, the Navy Commendation Medal, and numerous others.

Locally, he served on the Mobile Area Chamber of Commerce board of directors, the USS Alabama Battleship Commission and Foundation, the Kiwanis Club and Friends of the Library.

In a November 1967 article he wrote for National Geographic magazine he chronicled the challenges of night operations on the Antarctic continent. The Abbot Ice Shelf is named in his honor.

"Even though he was in his 90s, technology was always fun for him," said Reaney, adding that Abbot knew how to e-mail on his phone. He even had his own Facebook page.

Abbot was proud to be from Mobile, according to his sons.

They said he often told people: "I lived every minute of my life in Mobile, Alabama, except for a 39-year hitch in the U.S. Navy." ¶

James Rhode, P.E.

James J. Rhode was born in Menasha, Wisconsin on October 23, 1934 to August and Gertrude Rhode, and passed away November 21st, 2012 in Carson City, Nevada, surrounded by his friends and family. His primary home was in Kasilof, Alaska. Jim had an Alaskan career lasting fifty years. He was active in youth hockey in the early days of Anchorage, and his coaching and skilled players took his team right to the top. Jim was a licensed professional civil engineer, and self-employed licensed commercial pilot, a 100-ton master mariner, and a commercial fisherman; he was also a former U.S. Marine, flying in the Korean War. Jim enjoyed all of the aspects of the several careers. He was married for twenty five years to his wife Merlyn Paine, who held his hand til the end. Jim leaves his long-time best friends, Bill Miller of Carson City, and Captain Harold Kalve of Sitka, Alaska; and his four children: Patrice Deren of Anchorage, Alaska, James E. Rhode of Anchorage, Gail Rhode of Chandler, Arizona, and Kurt Rhode of Portola, California. He also leaves his two grandchildren, Nicole and Christopher Deren of Anchorage; his sister Jean Halloran of Green Bay, Wisconsin, and his cousin Elaine Rhode of Anchorage and Helper, Utah. Jim's cremains will be scattered in the spring at his home in Kasilof, Alaska. ¶

Thomas Tate

Thomas Tate, 79, passed away Sunday, April 28, 2013 at Memorial Medical Center in Las Cruces, New Mexico. A 1955 graduate of the US Naval Academy, as well as of Renssalaer Polytechnic Institute and Stanford University, Tom's 20-year career as an officer in the Civil Engineer Corps took him around the world. One of his earliest duty stations was the ship yards in Bremerton, Washington, where he worked on the construction of the world's then-largest dry dock in the early 1960s. He spent 14 months at McMurdo Station in Antarctica (Deep Freeze '63), as well as a year commanding 13 teams of U.S. Navy Seabees in Vietnam and Thailand. Throughout the 1960s and '70s he continued to serve his country in Japan, Hawaii, and on bases across the United States.

After retiring from the Navy, Tom joined the engineering and construction firm of Fluor Corporation, training young engineers and traveling the world as an expert in government and international contracts. Following his retirement from Fluor, he and his wife Donna moved to Las Cruces in 1994, where they have been actively involved with Memorial Medical Center, the Las Cruces Symphony Orchestra, the Community Foundation of Southern New Mexico, the League of Women Voters, and many other cultural and political organizations.

Tom believed deeply that volunteerism and personal philanthropy have the greatest impacts at home, and contributions reflecting his philosophy of "Community First" may be made to the Tom and Donna Tate Endowment at the Community Foundation or other local agencies serving residents of southern New Mexico.

Tom is survived by his wife, Donna, his daughters Melody and Kamella, and his brother Ray. Cremation is by La Paz-Grahams' Funeral Home, with a celebration of Tom's life to be held in the fall. ¶

Norbert Untersteiner

Norbert Untersteiner was a pioneer in polar geophysics, having much to do with the role of the Arctic in global climate. His work on sea ice resulted in its modern theory of thermodynamics. He was born on 24 February 1926 in Merano, Italy, and died on 14 March 2012. As part of the IGY, 1957-58, Norbert was appointed by the University of Washington as scientific leader on Ice Station Alpha, one of two floating ice islands in the Arctic. He later became a major figure in a major interdisciplinary, multistation, multiyear project known as the Arctic Ice Dynamics Joint Experiment (AIDJEX). His academic career included Professor of Atmospheric Science at the University of Washington (UW) and the University of Alaska Fairbanks. His experience was also instrumental in establishing the UW's snow and ice graduate curriculum, hiring world-class scientists to train generations of leading geophysicists, thus ensuring his legacy to continue. ¶

Albert H. Bridgman

Albert Bridgman, former surgeon and Station Leader at Hallett Station in 1959, passed away in March, according to the *Asheville Citizen-Times* (North Carolina), March 7, 2012. He was the fourth of seven children, born 16 August 1928 in Canada to Presbyterian missionaries who returned to China after a furlough when Albert was born. Albert spent much of his youth in China as a result. During WW II, he and his family were evacuated on the *USS Washington*, settling later in the mountains of western North Carolina. He later earned a Master's degree in zoology from Louisiana State University, followed by Medical School at LSU. Lt. Bridgman was part of a draft to place doctors at Antarctic stations, and appointed officer in charge at Hallett Station in 1959. Not long after he returned from Antarctica, he joined his lineage of missionary work and served in South Korea where he trained Korean surgeons. After that chapter in his life, he returned to North Carolina and worked at the Veterans Administration Hospital in Asheville. He was known as an esteemed surgeon, a daring aerobatic pilot, and an enthusiastic sailor. Bridgman Glacier (72°23'S, 170°05'E), east of Cape Hallett in Edisto Inlet, is named for him. ¶

Virginia "Ginny" Wood

WW II aviatrix, environmentalist, ecotourism pioneer

Most non-Alaskans identify Virginia "Ginny" Wood (1917-2013) with founding (1952) and for decades operating a wilderness camp in Denali National Park, Alaska. She and Celia Hunter were WASP pilots who flew two civilian airplanes to Alaska after the war to see the Territory that—as women—they could not fly to while ferrying warplanes. They settled in Alaska, and built Camp Denali with Ginny's husband, "Woody" Wood. Alaska residents remember Ginny and Celia for their support of conservation and wilderness values. They opposed damming the Yukon River for hydropower, and worked against exploding nuclear devices to create an experimental harbor on Alaska's northwest coast. Ginny and Celia also co-founded the Alaska Conservation Society, and helped set aside the Arctic National Wildlife Range. Ginny's biography, *Boots, Bikes and Bombers,* edited by Karen Brewster, was published by the University of Alaska Press in 2012. ¶

Ray E. Hall

Ray E. Hall, retired Navy aviator, died 14 February 2012 in Freelandville, Indiana, where he was born on 21 February 1923. He was a Lieutenant Commander in VX-6 during the IGY. Mount Hall is named for him, located in the Lillie Range at 84°55'S, 170°22'W.

Alan P. Gurney

Alan Gurney was born in 1936 and passed away in England on 22 July 2012 following a fruitful life of more than one career. He was sought after for many years as a result of his ability to design yachts, spending those early years in New York City working for people who recognized his talent in that regard. Eventually he went out on his own to continue that career, but like many lives that take several turns, he also joined the world of tourism in polar areas, employed on *Lindblad Explorer* for many years as a staff guide and lecturer. Originally from U.K., he spent some of his last years on the Isle of Islay in the Hebrides, but moved to the east coast of England where he passed away. His earlier life included a term as Corporal in the British Army, but a career in the military was not to be.

I met Alan when I was employed as a lecturer on the *Lindblad Explorer* in Dec. 1983-Jan. 1984, on an itinerary that included the Antarctic Peninsula, South Orkney Islands, South Georgia and Falkland Islands. Alan's presentations on history of expeditions was a treat to experience. Most lecturers employ slides or other illustrations to help explain the subject, but Alan never used any. He drew his own during the lecture, on a chalk board or an easel, showing the history of exploration of Antarctica in various time periods on sketches of maps and showing the geography of the routes of the explorers. He would often accompany the story by singing selections from opera in his strong baritone voice.

I found later somewhat the same treatment of Antarctic exploration in his book, *Below the Convergence: Toward Antarctica, 1699–1839.* A second book followed, "The Search for a White Continent," and later a third, "Compass: A Story of Exploration and Innovation." My impression of Alan from my sole cruise with him on the Explorer was that he had a love for the sea and adventure, and it served him well for what he did in life. ¶ **John Splettstoesser (modified from an obituary by Ted Jones, a Gurney colleague)** ¶

The Next 75 Years of the American Polar Society Begin Now!

Your help is needed to carry us onward: Suggested contribution, $75

If you were there, you will remember. If you weren't, please take a moment to read and think about what happened at Woods Hole.

Our 77th anniversary symposium—the topic of which was "The Polar Regions in the 21st Century: Globalization, Climate Change and Geopolitics"—concluded with a panel discussion in which nearly everyone in the audience got involved. Acknowledging that science has done its job in identifying and measuring the patterns of environmental change, audience members wondered, "What are we going to do about it?" It was agreed that the American Polar Society needs to have a voice where it counts, to assure the best future for the polar regions—stable governance, culturally-respectful policies in the north, preservation of the unique Arctic and Antarctic biosphere.

That sentiment carried over to the Board of Governors meeting, held immediately after the panel discussion. Right now, a committee is at work charting a vision and programs for the years ahead,

including a symposium on the polar oceans to focus on new research and technology to address today and tomorrow's most alarming atmospheric changes. Please act on your passion for the poles and the APS and make a contribution to enable us to keep up the momentum we gathered at Woods Hole.

A donation of $75 will help sustain our dynamic website, make up for the high costs of mailing our landmark 77th anniversary edition of *The Polar Times*, and keep us moving forward. A contribution of any amount would of course be welcome and honored.

"Climatologically, we are in unfamiliar territory and glaciers are responding," keynote speaker Dr. Lonnie Thompson said at Woods Hole. "We have three options: mitigation, adaptation or suffering." Please go to our website, www.americanpolar.org, and make a contribution today. Also, let us know your vision for the polar regions and the American Polar Society for the next 75 years.

Checks made out to the American Polar Society may be sent to: Edward Varney, Treasurer, APS, 45 Woodacres Dr., Northport, ME 04849. ¶

Membership Letter

Greetings from the coast of Maine! The membership center has been actively following up on many of our members who have email addresses. The Society wants to be as current as possible with quick news, messages and other communications, and email seems to be one of the faster ways to do so. Over half of our membership have email addresses. Our job is to keep them current in our database, so if your email address has changed or you have a new one, please let us know. And if you do not have one, do not worry, we will still do regular mail notices of information when needed.

By this time, everyone should have received the anniversary book about *The Polar Times*. Thank you for the nice comments and responses that many of you have sent in about it. With this current July 2013 issue that you have in your hands, we get back on to our regular track and hopefully will maintain our two-a-year publication pace. Numerous thank-yous go out to all who have renewed your memberships on time (or even ahead of time!). It makes our job in the membership center much easier, helps us to control communication costs, and is greatly appreciated.

As always, if you have a question or comment, please contact me by email or regular mail at the following addresses. It is my pleasure to serve as your Membership Chair. The American Polar Society's strength is in its membership. Thank you!

Charles Lagerbom

Membership Chair, APS

About Our Back Cover

Backlit by the setting sun, a polar bear growls into the distance. Photo: © Aqqa Rosing-Asved

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(Obituaries cont'd)

Harry G.R. King

It is with great sadness that the Scott Polar Research Institute announces the death of Emeritus Associate Harry King, Librarian at the SPRI from 1955 until his retirement in 1983.

Harold "Harry" Godfrey Rudolf King was born in 1921. During the Second World War, he served in the Royal Air Force as a radio mechanic and an educational and vocational training instructor. By 1949, he had completed a degree in history at University College, London. Following training with the Library Association, he worked in the libraries of London University, the Institute of Historical Research and the Manchester Guardian before becoming Librarian of the Scott Polar Research Institute in 1955. In 1959, his position as head of the library became a University of Cambridge post with dual responsibility for overseeing the library and information centre. In 1976, he helped to set up the Skellerup Antarctic Library at the Canterbury Museum in Christchurch, New Zealand.

Harry co-edited SPRI's 19-volume library catalogue, published in 1976, and edited numerous publications, including the Antarctic diary of Victor Campbell, South Pole Odyssey and The Arctic, an authoritative guide to the literature of the Arctic and Sub-Arctic.—Heather Lane, Librarian & Keeper, Scott Polar Research Institute ¶